Volume XXXII. JULY 1, 1904. Number 13

GLEANINGS IN BEE CULTURE

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THE A. I. ROOT CO.
MEDINA OHIO
U.S.A.

Western Edition.

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Western Bee-keepers.

Chicago has shipping facilities second to none. This insures the lowest freight and express rates. We carry a complete stock of supplies at our Chicago branch. Twelve carloads have been used here THIS YEAR. Save freight and time. Prompt shipments.

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Chicago, Rock Island & Pacific,
Chicago & Eastern Illinois,
Chicago & Erie,
Chicago & Western Indiana,
Cleveland, Cincinnati, Chicago & St. Louis,
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Michigan Central,
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American Express,
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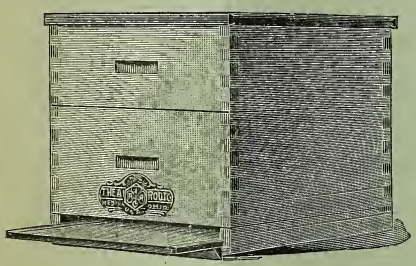

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This is the hive that has made such exceptional records at wintering. Not only does it excel in this, but, as a honey-producer, it has become famous. Send for our catalog and a copy of "Facts About Bees, FREE.

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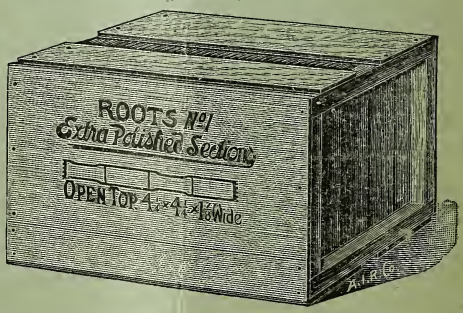
Be ready for the honey flow. Delay means loss. To order supplies 60 days before needed is the safest rule to follow. We carry a large supply of sections and make prompt shipments. Don't wait until to-morrow. Price list FREE.

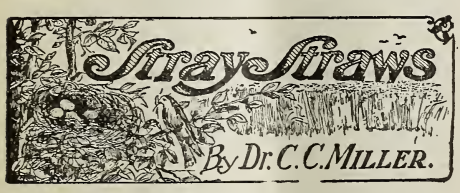


The A. I. ROOT Company,

144 East Erie St., CHICAGO, ILL.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
Published by THE A. I. ROOT CO. $1.00 PER YEAR MEDINA, OHIO.

Vol. XXXII. JULY 1, 1904. No. 13



SHALLOW extracting-combs are blamed for making bees swarm, in Mr. Doolittle's conversation, page 586. But don't the Dadants use such combs, and are they not notorious for the small amount of swarming they have?

WONDERFUL UNIFORMITY has been attained in making foundation. I kept accurate count of three 25-pound boxes of thin super foundation, and they filled respectively the following numbers of sections: 2716, 2744, 2736.

FRIEND GREINER, instead of using gum arabic as you describe, page 598, you might try dextrin, with a few drops of carbolic acid to keep it from souring. Gum arabic costs more than three times as much as dextrin, and seems no better.

BOTTOM STARTERS in sections should be ⅝ of an inch. If too small it is difficult, if not impossible, to put them in with a Daisy foundation-fastener, and the bees are more likely to dig them down. If too large they are more likely to topple over.

COOL DAYS in June have prevailed here as well as at Medina, and I've been thankful for it. It has held back the clover without hindering the building-up of colonies depleted by the dreadful spring dwindling. [We are still having cool days, and an abundance of clover is out. We are getting to be a little fearful, however, that this cool weather may hang on long enough so that the clover will finally go out of bloom.—ED.]

THE *Review* has an exquisite picture of orange-blossoms, and an article about them by W. S. Hart, both of them loaned to the *Review* by Editor H. E. Hill *before* their appearance in the *American Bee-keeper*. I always knew Harry was a nice fellow, and that act is confirmatory evidence of the fine spirit that is in him. [I wish to indorse both opinions expressed — that the picture of the orange-blossoms in the *Review* is "exquisite," and that Harry Hill is a "nice fellow."—ED.]

"TOLD YOU SO," Mr. Editor. Said I expected you to use a set of wires in cutting candy bricks, p. 323, and was told "three or four wires could not be used." Now you've grown so much that you can use "four or five wires," p. 589. [When I said we could not use more than one wire I had reference to the plan that we were then considering—namely, that of pulling a wire or wires through the mass by hand; but now that we have a beautifully constructed machine that works with precision, we have new conditions, making possible the use of more than one wire.—ED.]

S. T. PETTIT excites admiration by the careful way in which he goes to work to prove that more brace-combs are built between thick than thin top-bars, p. 595. But if ⅞ gives more brace-combs than ⅝ — and ⅝ seems to be as thin as he thinks practicable — there is still the real advantage in favor of the thicker bar that the greater distance of sections from the brood-combs makes the bees carry fewer bits of comb from the brood-chamber to darken the cappings of the sections. [You will find this discussion continued further by Mr. Pettit and myself in this issue.—ED.]

"THE CASE mentioned is probably one of paralysis and not of dysentery. If the former, it will have been cured by this time; if the latter, spraying powdered sulphur on the bees at night . . . would probably do much to effect a cure," page 605. Lest some beginner should get all tangled up in that, I will say that the order of the words "paralysis" and "dysentery" should be reversed. It's dysentery that gets well of itself when bees have a flight, and paralysis is the thing that sulphur cures. [Thanks for the correction, doctor. The types were badly reversed.—ED.]

TONS OF HONEY called "Orange-blossom Honey" is shipped each year from Florida, and it appears that it is a fraud on

the public. W. S. Hart says in *American Bee-keeper* that this honey all comes from outside the orange districts, and that not a barrel of *pure* orange-blossom honey was ever shipped out of the State. [If there are bee-keepers who are knowingly shipping honey under the catchy brand of "orange-blossom" when it is something else, their names should be made public, providing, of course, they will not discontinue the practice. Perhaps the mere mention of the matter in a general way will reach the proper parties.—ED.]

"THE SCHEME of lengthening the top-bar by cutting out the rabbet, and nailing a cleat on the end of a hive," p. 609, if I am not mistaken, is exactly the way movable-comb hives were first made. [You are correct, that Langstroth was the first to make a cut-out rabbet and hive-cleat clear across. I find that, in one of his early works, dated 1857, is a drawing where the rabbet was entirely cut out, the same as is illustrated on page 609. I have just consulted our patent-files, and find in the original L. patent, dated Oct. 5, 1852, that the form of the rabbet is not clearly shown; but the drawing gives the impression that the rabbet first used was the same as we are now using. If this is the case, then Mr. Langstroth subsequently cut the rabbet out entirely, lengthening the projection of the top-bar. This only goes to show how nearly Langstroth was right in so many of his conclusions. We have had instances of it before so repeatedly that we can only marvel at the wonderful perception of the man whereby he could discriminate between the best and the mediocre.—ED.]

I'VE JUST BEEN transferring into Miller frames combs from various other frames, and I marked one as of special interest. It's one I bought of Adam Grimm. I don't know how old it is, but Mr. Grimm has been dead 28 years, and I don't know how many years before his death I bought the comb. To look at it you would hardly notice it as a very old comb. [So far I have yet to see what I consider good proof that a comb more than 10 or 25 years old will rear smaller bees than a comb one year old. Nature certainly would not make such a fearful mistake. She is always in harmony with herself; and the presumption is that, if the cells do grow smaller from cast-off bowel-skins, or cocoons, the bees will remove them.

One is apt to be deceived about the size of his bees. A customer recently wrote us, stating that he wished to get some foundation for his bees that was 4½ cells to the inch, because the bees were larger than usual. I somewhat questioned the statement, and finally asked him to send me some bees in a mailing-cage so that we might measure them with a micrometer that would indicate thousandths of an inch. When the bees arrived they looked larger than common; but an actual micrometer test showed that, in every way we measured them, they were about the size of our regular stock here at Medina. A careful examination showed that the abdomens were slightly flatter and correspondingly wider, giving the whole bee the appearance of being larger. In the same way one might jump to the conclusion that his bees were small, and, if reared in old comb, reason that it was responsible for their smallness, when, in fact, they were not small.—ED.]

A. I. ROOT, that's wonderfully interesting reading on pages 610—612. Keep up the fight; you're doing perhaps more than you know toward making some of the religious papers behave decently in their advertising. [A religious paper that inserts doubtful or objectionable advertisements—especially those of the "get-rich-quick" kind—can not help weakening its influence on its editorial pages. When a paper is struggling for existence, a big cash offer of whole pages of space is very tempting; and the presumption is that some of these religious editorial leaders have a little bit of the old Adam left in them, in that the almighty dollar has not entirely lost its glitter. On the other hand, it is very easy for a large journal with an immense circulation to discriminate, because it would be impossible to insert all the advertising that is offered it, and therefore it can select only the best.

The *Ladies' Home Journal*, with its immense circulation—immense because its pages are clean, can do this. It has certainly set *some* of our religious publications to thinking along the line of practicing more what they preach.—ED.]

"LOCATION" is a thing laughed at now and then; but, all the same, it keeps right on making serious differences as to the way things pan out. There's that plan given by Mr. Doolittle, p. 587, whereby three colonies are made from two with no danger of swarming from either. Mr. Doolittle is a close observer, and one who is careful of his statements; and when he says he has tried a thing for "over 25 years, and it has always proved successful," you may bank on it as being reliable—for his locality. For many other localities, mine for example, it wouldn't work. Take "any populous colony which you have reason to think may swarm in a few days," and get the work "all done about three to eight days before your expected honey-flow." In this locality, three to eight days before the honey-flow you don't find colonies thinking about swarming. Again: "The removed colony is in perfect condition, less the field-bees which have been drawn off by its removal in just the right time to stop all idea of swarming for the season." In this locality, a colony removed to a new location before the honey-flow would merely have its swarming delayed, but would be just about as certain to swarm as if not removed. [In this locality swarming is apt to take place a little prior to the honey-flow—that is, a little prior to the real onrush of nectar; then it lets up a little. If there is any one

thing that varies according to locality it is swarming. And then it varies also according to the season. Here, for example, no honey has been coming in except just enough to supply the demands for brood-rearing. We have nothing but nuclei in our yards, for the reason that there has been such a heavy demand for bees we have had to draw on all of our strong colonies as well as weak ones. Of swarming we have had an unusual amount when conditions of weather, of the colonies, and the honey-flow seemed to be all against it.

The other day we had one swarm cluster a few minutes; and, before we could hive it, it went over the 50-foot evergreens, then struck out in a bee-line directly northwest. Heretofore our swarms have been more accommodating, and we have been in the habit of taking our time to hive them. This swarm could have been headed off if we had had ready a spray-pump with a pail of water; for I have proved personally that I can drive a swarm in the air like a flock of sheep, and finally force it to settle again. —Ed]

The *Canadian Bee Journal* suggests that combs which have been gnawed by mice can be made good by cutting out the torn part with the top of a tin can, biscuit fashion, then cutting out a whole piece from another comb and putting it in the place of the piece removed. The bees will do the rest.

♛

Mr. Titoff has just pointed out to me a passage in a Bohemian bee-journal, showing that the number of colonies of bees in the kingdom of Servia in 1859 was 50,200; in 1866, 106,000; in 1890, 124,600; in 1900, 172,400. That is a remarkable increase for so small a country—only half the size of Ohio. The Bohemians call a hive an "ul." Some might see a strange coincidence between this sudden advance in prosperity and the cessation of Turkish rule in that turbulent country.

♛

There's no doubt that the sale of comb honey suffers at both ends of the route — in the hands of the producer and in the store of the retailer in the villages and cities. On the 19th of June I was in a hamlet in the western part of Ohio, and while there I had occasion to stop in front of a grocery, where I saw some comb honey in the window. As it was Sunday, the store was, of course, closed. There were five sections standing on a little board, entirely uncovered, with the edges toward the window. The sections were badly stained or else ingeniously decorated, for they somewhat resembled a county map of Illinois. Right here was the fault of the bee-keeper, for he could have easily scraped the wood so as to show its natural color at least, and perhaps have removed some of the marks of the buzz-saw. The honey itself could not be seen except on the right side of the right section. The appearance of that side was fine — it could have been graded as "Fancy" without stretching the truth. It was as white as honey ever is; the cells were filled to the wood, and the surface was as flat as the traditional pancake. I have no doubt the sections were all like this one; but the part that first met the public eye was repellent — that dirty wood; and, worse still, flies were having a premature celebration of the Fourth all over it; and what business has a fly on food, anyhow? That grocer should have fixed those sections up in more presentable shape — trimmed their edges with some colored paper, and put them in a glass case so the surface of the honey could be seen from the outside, and thus keep all the flies away. Here, from beginning to end, every condition for the sale of such or any goods was violated. I greatly longed to read these lines to that grocer, but he was away. It must not be supposed that he was a sinner in this respect above all grocers, for, take it the country over, this state of affairs will be found in too many stores. There is no article of human food that deserves to be presented in more attractive form, and kept more spotlessly clean, than comb honey. Further, why should a man who is in business to make a living by selling things stand so exactly in his own light, when it would be just as easy and far more pleasant to present his goods as if they had just come out of the bandbox instead of some repulsive place?

♛

BRITISH BEE JOURNAL.

The editor cites the case of a Frenchman who sowed a field with buckwheat, half of which received a good dressing of farmyard manure, and the other half was dressed with lime. On the first, not a bee was to be seen when the plants flowered; whereas on the second they were flying in thousands. There is no doubt that lime in the soil is a great agency in inducing a flow of nectar.

♛

In the French-speaking cantons of Switzerland, 264 bee-keepers insured 4198 hives of bees. The cost of insurance was about a cent apiece. Every bee-keeper is expected to make a correct return of the number of his hives so that he may be correctly assessed.

♛

An old English bee-keeper expressed some doubt as to the large yields per colony reported in some journals. A writer in Mr. Cowan's journal replies, "In Argentina, average takes of 330 to 550 lbs. per hive are common. One American produced 112,000 lbs. of surplus last year, 22,000 lbs.

of it being comb honey. Another apiarist has 700 colonies in one location in one yard. One State can turn out 8,000,000 lbs. of honey. Several individual bee-keepers possess over 3000 stocks."

TIME WHEN YOUNG QUEENS BEGIN TO LAY.

"My name is C. W. Babcock, and I came to have a little talk with G. M. Doolittle. Is this he?"

"That is the name my parents gave me. What can I do for you?"

"It is like this: I had lots of trouble last year by young queens turning up missing along in August, or, at least, that was the time I found that many of my colonies which had swarmed were without queens. What I wish to know is, how long a time must elapse between the time the first or prime swarm issues from the parent colony, and the time the young queen begins to lay."

"In your question we have something which is very often overlooked by very many bee-keepers, if I am to judge by the many letters I get, telling of trouble similar to yours, and colonies are allowed to go without queens till laying workers appear, or the colony dwindles down to where robbers take away all the honey the hive contains, and then the owners find out something is wrong, when it is too late to remedy affairs."

"That describes me, C. W. Babcock, exactly, and I want you to tell me how to avoid this state of affairs."

"As a rule, the time from the issuing of the first swarm to the time the first young queen emerges from her cell is seven days."

"Excuse me; but I must ask some questions as you go along, in order that thick-headed C. W. Babcock can understand. What are the exceptions to this rule?"

"If the swarm issues before the sealing of the first queen-cells, then it may be from eight to sixteen days before the young queen emerges, just according to how far advanced the embryo queens were at the time of the issuing of the swarm. But the rule is that the first swarm comes with the sealing of the first queen-cells."

"I see. That makes it plain."

"After the young queen emerges, if after-swarming is allowed it will be all the way from four to eight days before a young queen becomes established in the hive over her rivals, just according to how the bees treat the young queens which are in their cells after the first one emerges."

"What do the bees have to do with it?"

"If after-swarming is to be allowed, then the bees cluster in little knots about each queen-cell, to keep the emerged queen from killing her rival sisters. This causes an after-swarm to issue two to three days later; and if the bees still cluster the cells after letting another young queen out, another after-swarm issues, and so on till they conclude to swarm no more, when all but one young queen is killed, and the living one established in the hive."

"Well, that is something I never understood before."

"The queen, once established, will fly out to meet the drones when from five to eight days old; and as a queen may not be more than a day or two old when established, it may be five or six days afterward before she mates. Then there is a period of from two to three days after mating before the queen begins to lay."

"Then we should have seven days in the cell, eight days before flying out, and three days after flying out, or eighteen days from the time of issuing of first swarm till the young queen should be laying?"

"That would be about right where there was no after-swarming; but where there was, there would be five or six days there to add, so that, where after-swarming is allowed, it will often be from 22 to 24 days before the queen commences to lay."

"Yes, I see."

"Then should you look to see if any queen was laying at about the time she first commenced, the eggs would be so scattering that you might make a careful search of nearly all the combs before you see these few eggs, as they are so few and far between that it will bother you to find them; hence I always consider it a paying policy to wait 26 to 28 days, at which time young larvæ should begin to appear, which, together with the eggs in several combs, tells you, generally, upon the lifting of the first center comb of the hive, that the young queen is there all right."

"Yes, I see. And I now see, also, that, in failing to make any such examination, I was in ignorance in this matter, till, should the queen fail in laying, it was too late. But what do you do where you do not find eggs or larvæ when looking 28 days after the first swarm issued?"

"If no eggs or larvæ are found, a frame of brood should be immediately given, when you will look again in two days to see if queen-cells are being started. If so, then the colony should be given a laying queen at once; or, if this is impossible, two or three frames of brood should be given them at once."

"Why don't you give a laying queen as soon as you ascertain there is no brood in the hive?"

"Because I am not yet sure they are queenless. They may have a crippled queen, one that could not go out to meet the drone, or something they were tolerating as a queen, in which case they would kill every queen I tried to introduce."

"Then the giving of the brood is to find out for certain whether they are queenless?"

"Yes, mainly. And then it strengthens the colony later on also."

"Yes, I see. But why do you give the three frames of brood if you can not give a laying queen as soon as you find out the colony is queenless?"

"Because the bees now in the hive will dwindle to where they will be of little value before any young bees will emerge from the eggs from a queen they may raise from the one frame of brood given to test the matter; for it will take them 12 to 14 days before the young queen would emerge, 10 days to the time of her laying, and 21 days before her bees would emerge. In other words, it would be from 42 to 45 days from the time the brood was given, or about 70 days after the old queen left the hive with the first swarm before any young bees would come from a queen raised from the brood given, and by that time the colony would be very nearly in the condition you and others find them when you pay no attention to these things."

"Yes, I see now. You are making this very plain. But be patient just a little longer with me. Suppose after-swarming is not allowed—what then?"

"Then we have 7 days to the time the first young queen emerges from her cell, 7 days to the time she flies to meet the drone, and 3 days to the time she begins to lay, this making 17 days as the shortest time any young queen is likely to be found laying from the time any prime swarm issues. Then I would wait three or four days more till eggs and larvæ might become abundant in the combs, so I could expect to ascertain what I wish on lifting only one or two combs. My practice is to look for eggs and larvæ on the 23d day from time of swarming, when no after-swarms are allowed, or on the 27th day when such swarming is allowed."

"Do you always look thus?"

"Not of late years, as years of looking at the way bees act at the entrance and in the sections has enabled me to tell at a glance, along about the dates named, whether the colonies have a laying queen or not. But you will need the knowledge which looking gives at first, to guide you."

"Please explain a little more fully."

"When by looking you find a colony that does not have a laying queen the 25th day after the first swarm issued, close the hive without giving any brood; just watch the bees in their actions at the entrance for a day or two, and compare their actions with one you know has a queen that has been laying about three days. Then look at the work or non-work going on in the sections of the two hives; and if you are a careful observer you will ever afterward be pretty sure regarding this matter without opening a hive, and can, to your satisfaction, diagnose what is going on with any colony from outside appearances."

BEE-KEEPERS who produce clover and basswood should not forget that, the earlier they can get their crop on the market, the better prices they will probably secure.

GLYCERINE NOT A PREVENTIVE OF CANDYING.

OUR readers will remember that we have been conducting some experiments, putting in 1, 2, and 5 per cent proportions of glycerine in order to prevent candying. The one per cent failed to accomplish its object; but during the first two months the 2 and 5 per cent seemed to keep the honey clear. Within the last few days I find that *all* the glycerine samples have candied, proving that glycerine does not begin to compare with the plan of heating honey and sealing while hot. If our experiments prove any thing I think we may conclude that glycerine for the prevention of candying is not to be relied upon.

THE HONEY CROP IN THE CLOVER AND BASSWOOD BELT FOR 1904.

AT present it is impossible to offer any sort of prediction. The season is late, and the weather has been cool — too cool for the proper flow of nectar. Reports received up to this time have been somewhat discouraging so far as the amount of nectar secreted is concerned, but encouraging as to the amount of white clover in bloom, and more encouraging still that there will probably be a yield as soon as the weather warms up. We have had two or three days of warm weather, and our own bees are beginning to go to the fields. During the past few days they have been working from hand to mouth. The ground is moist in most localities near the lakes, and the frequent rains have made a good lot of vigorous plants of clover.

We request our subscribers everywhere, outside of and in the clover belt, to send in postal-card reports of two or three sentences — don't make them longer — relative to the condition of the honey-flow, and the prospects of a crop of clover or basswood. Don't — *don't* — send long letters about the season, as we can't wade through them. Those received will be set aside for the postals. We will summarize the reports, and give our readers the benefit. It is very important to know what the crop will be, in order to determine something about prices; for clover and basswood are the most important factors in determining the price of comb honey in the great centers. Therefore, dear readers, it means dollars

to you to help us in determining what the crop will be. Whatever the yield may be, heavy winter losses will have a strong tendency to cut down the total output, and probably will result in stiffening prices of new honey, even in the event of a good yield.

AN ASSOCIATION BRAND OF PURITY.

SOME years ago Jamaica honey was put on the European markets, where it brought a very low price. Later on, the progressive bee-keepers of that island formed an association and put their brand on all the honey put out by them, and, presto! the price nearly doubled.

In our issue for June 1, p. 536, I suggested the feasibility of the National Bee-keepers' Association attaching its own brand of purity to the honey put out by its members.

I am firmly convinced that something of this kind ought to be done, then there will be an additional incentive for bee-keepers to join the Association. I am not so sure but the National ought to have in two or three of our great centers of trade some one appointed to receive consignments of honey from its members, and dispose of it at a nominal commission, say 5 per cent, the commission to go to the Association to defray the expense of a salaried official to receive the honey. This same official might affix the National brand of purity to the honey. The general public would assume that all honey bearing the brand of a national body of honey-producers would necessarily be pure and genuine bee honey.

THE GREATEST HONEY-PLANT OR TREE IN THE WORLD; BEE-KEEPING IN THE WEST INDIES.

A FEW years ago we used to say that basswood, for a given acreage, would yield more honey than any other tree or plant known; but from the best evidence in hand it is apparent that the logwood of Jamaica, British Honduras, and Hayti, will excel it. It is the most remarkable and perhaps heaviest nectar-bearing source known in the world. It comes on early in the holidays, yielding honey heavily clear on through January. The bee-keepers of Jamaica think nothing of securing averages anywhere from 100 to 200 lbs. per colony from it.

In point of color the honey is equal to any thing produced in the world. The flavor is mild, and if our tastes were educated to it we should pronounce it the equal of any thing produced in this country. It does not as yet compete with the American product, owing to the duty. The great bulk of it is shipped to England and other portions of Europe.

Bee-keeping in the West Indies, in a modern way, has only just begun. While the United States ranks first in the amount of honey produced, and the number of bee-keepers, it would not be at all surprising to me to learn that Cuba and the rest of the West Indies will be able in time to show up a larger aggregate tonnage per season. If, however, all deserts of our great West should be made to blossom, and to bless man and beast with the immense acreages of alfalfa as *some* of the deserts have, we shall give our West India neighbors a long and hard race.

THE FOLLY OF SENDING COMB HONEY TO MARKET UNSCRAPED AND UNGRADED; A GOOD-NATURED SCOLD.

WHAT I am about to say now is not intended for bee-keepers who scrape and grade their comb honey, and put it up in clean new shipping-cases before sending to market. All such, to save time, may skip this, as "the shoe won't fit;" but the other class — those who are too indifferent or ignorant, or are too something, of the principles of making sales—should read this carefully; and when I am addressing this c ass I am well aware that I am speaking to the great majority of comb-honey producers; for it is indeed a fact that the great bulk of the comb honey that goes to market is not scraped, or if scraped it is improperly graded, if graded at all; or it may be scraped, but injured in appearance by being put in badly soiled shipping-cases, or, worse still, home-made cases. I have been through a number of commission houses, and have looked over the lots of honey that have been received. I have seen every shipment that has come to Medina; and to see the ordinary honey that is shipped to market, which otherwise might have been No. 1 and "Fancy," all mixed up in the cases—cases soiled, sections unscraped—well, it is enough to make one's heart ache. Then the producer of such honey, when he gets his returns, complains because they are below the market as quoted in the journals; and he thinks his commission man is dishonest, when the fact is the whole trouble is with himself. If he had taken a day or two to scrape and properly grade the honey, he could have earned anywhere from $25 to $100 a day in the larger returns secured for that same honey. A little No. 2 or off-grade honey put in with No. 1 and "Fancy" puts the whole caseful down to the price of No. 2. We have received several lots of such honey, and, rather than make poor returns, we have gone to the expense of regrading and scraping, selling the "Fancy" at one price, the best the market affords, the No. 1 in another, and the No. 2 in still another. Of course, we charged the producer for the time expended; but in doing so we have earned him good money. Where we buy this mixed honey outright, of course we pay a low figure for it, then grade and scrape and sometimes recase, with the result that we make a good margin on our investment. But should the buyer profit by the negligence, carelessness, and indifference of the producer? It takes experience and skill to get comb honey, and a good bit of it sometimes, I think. It takes but just a little more of that same skill to put that honey, when

once secured, in good marketable shape where it will bring the best the market affords. But this is not all of it. Besides securing the best prices, the producer will usually get *prompt returns*. No. 1 and "Fancy" sell, as a rule, with little or no delay, where mixed and ungraded goods are a drug on the market; and the poor bee-keeper waits months, sometimes, before he gets returns; then when he does get them his honey has to be sold at a sacrifice, because at the time of the sale it is leaking, possibly candied, and the actual net return is only a half or a fourth what it would have brought if the honey had been scraped and graded.

Sometimes we get some beautiful fancy honey put up in second-hand cases, or cases that are soiled and dirty, making the whole lot look poor. If they were new cases, but simply soiled, a small piece of sandpaper on a block of wood will make them look almost new in two minutes' time; but if the cases are second-hand, and roughly sawn —well, there is nothing to do but to recase. Commission men say, and our own experience goes to corroborate it, that a good case well made, carefully nailed, *and clean*, will make the honey bring enough more to pay for three or four good cases, where, if it is a poor one, it knocks the price down on the whole consignment, no matter how well it may be scraped and graded. In saying this, I may be accused of "grinding our own ax," because, forsooth, we make and sell shipping-cases, but that is not the motive. But it does hurt our business when bee-keepers fail to get good prices, and honey is a drug on the market.

But this is not all. No matter how much honey may be properly graded and scraped, if it is left on the hive till it is travel-stained it is liable to be lumped off as No. 2. Of course, we bee-keepers know that honey that has been on the hive for some time after it has been gathered acquires a richness that it will not have if taken off at once. But that is not the point. The public demands, and will pay a better price for clean white goods than it will for soiled and dirty honey that possibly may have a better flavor; for of this fact the public knows nothing, and it therefore has no weight. People are in the habit of buying by sight; and if the goods do not *look* as good as the best they do not want them.

I tell you, brother bee-keepers, and I say it with all kindness, if you but *knew* how much good money you are losing sometimes, under the delusion that it does not pay to scrape or grade, you would reform your ways very soon. Pick out an honest commission house or honey-buyer, then follow his suggestions. Do not imagine that you know more about it than he does as to what the public wants and will pay for.

And, again, do not send your No. 2 and off grades to market — better by far sell around home, where you can explain that your travel-stained honey is just as good as or even better than the "Fancy white" which you ship to the city. If the sections are poorly filled out and unscraped you will probably get a better price by cutting the combs out entirely and mixing with them a good grade of extracted honey, and selling to your neighbors as bulk comb honey. But do not attempt to ship this to the Northern cities, at least, where it will be sold as a glucosed concoction.

Now, dear friends, if you will take these suggestions in the spirit in which they are written, you and the honey-man in the city will both profit; and you will at the same time stimulate the comb-honey market. There is no trouble at all in selling No. 1 and "Fancy" comb honey — bear that in mind.

HOFFMAN FRAMES—THEIR MERITS AND DEMERITS.

THERE has recently been some discussion in the *Bee-keepers' Review* and in these columns regarding the merits of the Hoffman frame. Mr. W. Z. Hutchinson and Mr. J. A. Green are foul-brood inspectors for their respective localities, and, of course, have had opportunity to examine hundreds of hives, handling a great variety of frames as a matter of course. Both men take the view that the Hoffman is not a convenient frame to handle, and there are some others of the same opinion. Mr. Green, while not condemning the frame, believes it has inherent defects which might be remedied, but he does not show exactly how. The chief objection that seems to have been raised against it by himself and others is that the division-board that is sent out with it in the hive with which it goes can not be removed readily; and because of this fact the difficulties attendant on the handling of such frames is very greatly increased. Mr. Green says, "If the division-board or follower were more substantial, and a little more space were allowed back of it, a careful operator could get along with it very well." But he does not indicate *what* construction of follower would be better; nor does he explain how it would be *possible* to provide for more space in the standard hive, of which, perhaps, a million or more are in use. The manufacturer is glad — yes, eager—to adopt whatever improvement will *surely* be an improvement, providing it is practicable to carry it out. But he can not introduce a change which throws all other supplies out of harmony with it. It would be impossible to make standard hives a little wider without calling down upon our heads the righteous indignation of all our old customers whose old hives and covers wouldn't match the new.

From a careful reading of Mr. Green's article in the *Review* it is evident that the follower which is pronounced flimsy is not the one the Root Co. has been making for the past four or five years; but I notice that some of our competitors are still making the same old follower. The one we now make is much more substatially made, and

can be removed with a hook or even with the bare fingers. See what Harry Lathrop says on p. 658, this issue; also J. E. Chambers, on page 660. But I am quite free to confess that any construction of follower which I have seen suggested will be difficult to remove where propolis is very bad. That same objection will apply to any closed-end frames where the space in the hive is limited.

But perhaps friend Green condemns (and rightly, too) a hive using a follower in the regular standard ten-frame Dovetailed hive. This does not and never did allow of such a thing. But because customers complained that we supplied it with the eight-frame hive we put them in packages of ten-frame — not with the expectation that they would be put in the whole ten frames in the hive at once and the follower too. It can be done after a fashion, and we have found that many of our customers have done so, when we have distinctly stated it could not be with any degree of satisfaction. If I were a foul-brood inspector, and had to open up one such hive I am afraid I should feel more like "cussing" the manufacturer than calmly sitting down and *dis*cussing the matter in a friendly way with that same person. If Mr. Green or Mr. Hutchinson has been working this kind of combination or has been running up against the old-style follower, I don't wonder they both write as they do.

The columns of this journal are open for the discussion of the Hoffman frame. While we know positively that in some warm climates, where we have tried to introduce some other frame than the Hoffman, the great majority of our customers in those climates will have nothing else. For example, in Cuba we urged our agents and dealers not to favor the Hoffman frame, believing that, on account of propolis, it would not be satisfactory, and that it would be better to recommend the thick-top metal-spaced frame which we sold. But our customers would not have it so, and demanded the Hoffman, and the Hoffman they are buying by the thousands.

I admit that, in some localities, this frame can not be used, owing to an excess of propolis; and right in this connection I know from personal observation that Dr. Miller's location is one of them. It would not be at all strange if parts of Michigan and Colorado would furnish the same amount of propolis, rendering the frame a nuisance.

It is well to bear in mind that not *all* manufacturers make the Hoffman frame alike. As made by some of them it would exhaust the patience of an angel, to say nothing of the outraged feelings of a common every-day mortal who thinks (if he does not say them) words that do not find the printed page. It is well to remember that there are Hoffman frames and Hoffman frames, and there are followers and followers.

I wish to say in this connection that I thoroughly appreciate the kindly spirit manifested in the criticisms; and some of my friends have hesitated to say any thing about it in print for fear it would "hurt my feelings," because, in fact, I suppose I introduced them to the bee-keeping public. For the benefit of our younger or more recent readers, I will state that, in 1890, I made a bicycle-tour through New York, and there saw that closed-end and half-closed-end frames were being used very extensively. I came away convinced that the self spacing feature as used by Mr. Julius Hoffman was a great labor-saving device, and I still think so. But there are differences of opinion as to which of the self-spacing frames is the best. All things considered, I came to the conclusion that the Hoffman combined most of the advantages, and that it would be best adapted to most localities. The fact that millions of them are made now would seem to bear out the correctness of that opinion, although I admit it is not conclusive proof of it. But as for "hurting my feelings" — dear, oh dear, no! I invite friendly criticism, and our columns are open for a general discussion of the whole matter. Neither the Root Co. nor any other manufacturer could afford to take the position of keeping back the truth or trying to force the bee-keeping world to buy something it ought not to have if it does not know. From a business point of view it would be suicidal.

We shall be obliged to friend Green, and will pay him for it, if he will suggest the construction of a follower that will not at the same time run into some other difficulty. It is not a question of making the hives wider, as we can not change a standard dimension at this late date *unless an entire sweeping change* is inaugurated. As I have said before, we provide very deep hives; standard Langstroth depth; Danzenbaker with frames a little shallower, and still other hives with frames shallower still. We have metal-spaced frames, half-closed ends, closed-end, and old-style thin-top unspaced Langstroth, and unspaced frames with thick top-bars.

Now, in inviting discussion we are not seeking the opinion of the kickers only, but we desire to get expressions from both sides — yes, from those who have used the Hoffman frames extensively as they are and as we have made them, and from those who have used them and do not like them. What we desire to get at is the general consensus of opinion, and not the opinion of one side or the other who may possibly have extreme views, but represent only the small minority; and in saying this I do not mean to class Brothers Hutchinson and Green as the extreme kickers of the wee little minority. I think they know me well enough to accord to me a better opinion of them than that.

I have thus far published every thing about the Hoffman frame, for and against, except in one or two instances, which were personal matters and nothing concerning the merits of the frame itself.

"Here he goes, boys! Gracious! what a track! he's a big one."

"All right; now go slow and careful, and let's not lose it again."

There were three of us, and we had started out on a thawy day in February of the winter just past, in quest of coons. About noon we struck a track which we followed with difficulty, owing to the fact that a crust had formed the night before, which enabled the animal to travel for several rods without breaking through; and it was only when we found the thin places that we could do any tracking.

It was after a longer search than usual, and the final finding of the lost track, that Doc called out, "Here he goes, boys!"

All was now plain sailing for a time, and we followed the trail over logs and through brush to a tall oak where the tracks seemed to end; but the marks upon the tree-trunk and the scattered pieces of bark upon the snow showed plainly that the coon had gone up.

"Say, boys," said Fred, "we'll have that coon inside of twenty minutes."

"He's our meat," said Doc.

"Yes, that's all right, Doc," said I; "but where's the hole he went into?"

"Oh! it's probably up somewhere in that crotch where those two big limbs branch out; but let's not fool away any time—days are short, and that oak's no fishpole."

A half-hour's work with ax and cross-cut saw brought the tree to the ground. A rush for the top, and a hasty but unsuccessful search for the coon followed.

"What's become of that coon, anyhow?" said Doc.

"Oh! he's probably in that hole in the crotch," answered Fred.

Here Doc indulged in some choice talk that couldn't be put into a religious book without injuring the sale of it, and then proceeded to examine the tree. Not a hole could be found large enough for a bumble-bee to crawl into.

Pretty soon Fred called out, "Here are his tracks! He's come down that big hemlock, and fanned out."

Away we went again until we reached a pine stub broken off about twenty feet from the ground. The coon had climbed this and come down. A few rods more brought us to a large chestnut where the act had been repeated.

"Say, boys, that coon must be training for a cake walk; he's getting lots of exercise out of it, anyhow. I'd like to know what he is doing all this climbing for."

"Guess he's lost something, and trying to get on track of it," said Fred.

"Now," said I, "that's pretty close to the truth. I can tell you what that chap's up to. He's trying to get on track of some honey."

"Honey?"

"Yes, honey. That coon is a bee-hunter, and that's what he is climbing the trees for."

"Do coons like honey?" Fred asked.

"Like it? Well, I should remark. Why, don't you know the coon is little brother to the bear? and both are passionately fond of honey."

"Well, this is interesting; but, come! I'm anxious to wear this little brother's scalp in my belt," and Fred led off on the trail which now took us out on the smooth ice of the bayou, where we lost the track entirely.

"Well," said Doc, "I guess we might as well fold our tents like the Arabs, and silently steal away. We can't track any thing on this ice."

"Don't give up yet, Doc," said Fred. "I'll bet a brownstone front he's making for Wintergreen Island."

Fred now took the lead. I came next, and Doc last. A sort of sliding or skating motion was made necessary by the extremely slippery condition of the ice, and we had not proceeded far when an expressive "*Ugh*" in the rear caused us to look back, and there was Doc sitting on the ice in the

shape of a letter V, hands and feet in the air.

"Tired, Doc?" asked Fred.

"That's what Mark Twain would call attitudinizing," said I.

What Doc said was drowned by the explosion of laughter at his appearance, which, I think, was just as well from t e nature of a few selections which reached my ears. Doc picked himself up and said, "Well, laugh, you blamed idiots; I have my opinion of any one who will laugh at the misfortunes of others."

"Oh! come, Doc," said Fred; "you'd laugh if you could have seen yourself as we saw you," and Fred struck out for the island; but he had made scarcely twenty paces when he dropped the saw he was carrying, and began wildly clawing the air in the endeavor to save himself from falling.

"Whoop! grand right and left," sung out Doc, as Fred finished the performance by bringing up with his arms around a water-beech. Fred looked around. I was laughing, of course, but Doc was just simply paralyzed. He was doubled up like an old jack-knife, and not a sound escaped him; but we could see his sides nip and buckle, and finally he got out two or three grunts followed by "Oh! oh! oh! whoop!" and then a prolonged "haw, haw, haw," which seemed to relieve him so he could straighten up. The tears were running down his cheeks, and his face looked like a brick smokehouse overgrown with red Rambler roses.

"I say, Doc, you feel better, don't you? I have my opinion of any one who will laugh"—but Doc's "haw, haw, haw" cut short any effort of Fred's to get back at him, so he picked up the saw, and, with a marked degree of care, pushed forward toward the island.

Some twenty-five or thirty feet from the shore of the island grew a large elm. Pieces of bark scattered about showed that the coon had gone up. I was admiring the clear ice, and saw several inches below the surface pieces of both drone and worker comb. I called attention to this, and we all became enthused.

"We'll get a bee-tree, anyhow," said I.

"Yes, and may be two or three coons," said Doc.

"Well, yes; you may; but I wouldn't be surprised if we didn't find a coon."

"All right," said Fred; "we'll take the coons, and you can have the bees and hone ;" and I saw him wink slyly at Doc.

"All right, boys; I'll stand by that."

The tree proved to be a thin shell, and a few minutes of work brought it crashing down full length upon the ice. We were quickly at the top. Here we found a hole eighteen inches long and a foot wide, going entirely through the body of the tree. I could hear the hum of bees, and found that they were above the opening Further inspection showed that comb had been taken out from the trunk above this opening a distance of eighteen or twenty inches, probably as far as the coon could reach.

We now cut off the body where we thought the bees were, and again about three feet higher. This gave us a section about three feet in length. The bees were found in a fair sized cluster, and so compact that the cluster was not even broken by the fall.

We now searched for the coon, but none could be found. In fact, there was no lodging-place for this roving bee-hunter, as the tree was hollow throughout.

Fred and Doc were disappointed, but I did not care much, being more interested in the bees. Here was a hive at least forty feet from the ground, robbed of a large portion of its stores, and exposed to fierce winds in the coldest winter known in this region for years, when the mercury ranged for several weeks in succession from 4 to 25 degrees below zero, and on one occasion 40 degrees below, with no bottom protection of any kind. I took the section with bees and honey, and placed them in the cellar; but they died before spring, evidently from lack of stores.

THIN VS. THICK TOP-BARS.

Advantages in Favor of the Former.

BY S. T. PETTIT.

Mr. Root:—While considering the superiority of thin top-bars, compared with thick ones, first let us notice the gain by using a ⅝ instead of ⅞ top bar. For this purpose let us take the ten-frame Langstroth from which to make our calculations, presuming it to be an average-sized hive now in general use in the United States and Canada.

The gain in comb depth in each frame is ¼ inch; in ten frames the gain is 2½ inches ×17=42½ square inches of comb by 50 (the lowest estimate of cells to the square inch) makes 2125 cells gained in the brood chamber alone.

The difference between ⅜ and ⅞ is ½ inch, would give a gain of 4250 cells to the brood-chamber.

Many use the same top-bars in both brood-chamber and extracting supers, and in such cases the gain is indeed a consideration of no small importance; nor is it in the brood-chamber alone.

It must be borne in mind that we are not discussing the size nor the depth of hives. These are quite different considerations altogether; but whatever the dimensions of the hive may be, we certainly should economize every possible internal available inch that can be used to advantage. Hives cost too much to waste any inside space. I am too economical of money and personal comfort to buy, handle, and haul about most of my lifetime worse than useless wood. It has been held by some that a depth of ⅞ is necessary to prevent the bees from using black wax from the brood-chamber to cap sections.

Once I was led to fear danger from that source; but I doubt there being any danger if they are properly handled. I took comb honey, with and without excluders, for a period of about 16 years over ⅝ top-bars, and I question if any one could detect any

difference in whiteness or in any other way, whether taken over ⅜ or ⅞ top bars. No drones among the sections, and timely taking off, are the chief factors in securing whiteness of comb honey. Bees don't go hunting around for "old black wax" so long as their sacs are full of new honey.

My first effort at taking comb honey in a scientific way was rather unscientific, as my narrative will show. I give it for what it is worth in this connection. It was a good many years ago, and I do not know that any one was taking comb honey within thirty miles of my place, so it was not easy to take lessons from others.

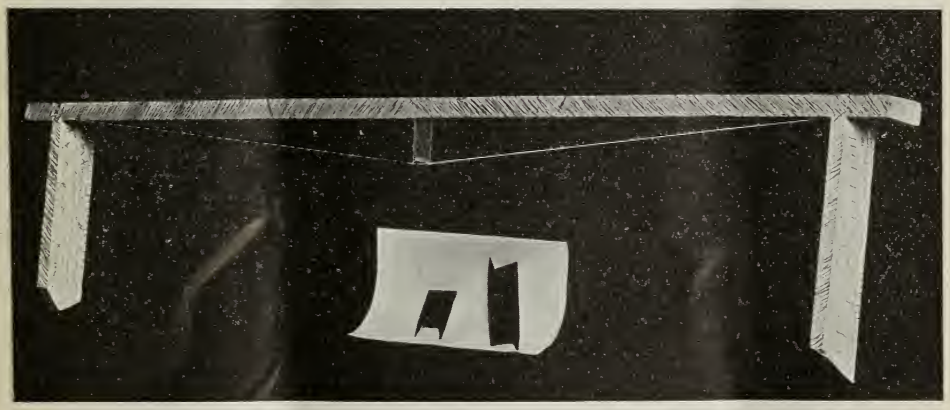
Well, my hives had no bee-spaces at the tops, and my supers had no bee-spaces at the bottoms. The sections rested upon strips of tin nailed under or to the under edges of the supers. The sections were filled with foundation; they were 1⅜ inches wide; no separators were used. The top-bars were ⅜ inch thick, and had a V-shaped extension below them, and were spaced the same as the sections — 1⅜ inches from center to center, so the spaces between the sections fitted right over the spaces between the frames.

Well, then, the supers, sections, and all were set right flat on the tops of the hives and top bars, and there was no hesitation on the part of the bees. They went to work and filled those sections in quick time. At that time I knew nothing about putting sections and supers under the first, so I put them on top. When the flow ceased I was anxious to see the section honey; so I took them off, pried them off, got them off somehow, and the sections showed no sign of "black wax."

Every year farmers bring hundreds of sections to our town and place them in some of the groceries so travel-stained, and the wood so covered with propolis, as to leave no doubt that they have been left altogether too long with the bees. In some instances I am persuaded that they had been with the bees a month after the honey season was past. They are a sorry sight, for at this writing some are still on sale in the groceries, and yet I have never seen any "black wax" on the cappings; but they are badly travel-stained.

I do not wish to make this point too strong; for, if really there is danger *when taken off in reasonable time*, we should know it and guard against it. But in any case a ⅜ bar is as safe as a ⅞ bar, and, really, is not a ⅜? The thinner the top-bar, the more easily the bees pass over it in winter, and that is no small item. The thinner the top-bar the more readily bees go to work in sections, doubted by some, of course, but not by me. In a good flow, strong colonies stick at nothing; but poor seasons test the matter.

In further support of thin top-bars I quote what a manufacturer said several years ago, to be found on page 742, 1901: "This is an exceedingly important matter; for if top-bars of brood frames under proper conditions are just as good ⅜ thick as ⅞, we could make twice as many out of the very same material which we now use in making such a large quantity each year. It would save heavy freight charges to customers,



PETIT'S SUGGESTION FOR TOP-BARS.

and the first cost and selling price could become lower." "There ought to be strong grounds for continuing the ⅞ top bar if it is to be continued." I must say here that my inquiries, recently made, agree with my past experience that there is no more need of excluders over ⅜ than over ⅞ top-bars, both being of the proper width.

But the question still comes up, "What about the sagging? Can a ⅜ top-bar be made cheaply with the needed rapidity? I believe it can. I herewith send a photo of a ⅜ inch top-bar showing a truss-wire passing under a piece of folded tin or sheet iron ¾ inch deep and ⅝ inch wide. Cut the material before folding, so as to leave little

spikes at each opposite corner, as shown in the photo.

Fasten the wire at each end with 3 cz. cut tacks driven about an inch from the end-bars. Drive the tacks ⅔ in, wind one end of the wire around one nail; drive it home, then draw the wire fairly taut and give it a turn or two around the other nail, and drive it home; cut the ends off, and the added strength will be quite a surprise, and quite sufficient.

But, after all, perhaps for the average specialist a ½-inch or Mr. Doolittle's choice, a $\frac{5}{16}$ inch, is preferable. Either one 1⅛ inches or near that width will be found strong enough.

Right here, perhaps, I had better say why: Years ago I fixed upon a ⅞ top bar. My covers were large, and purposely made heavy to keep in place in windstorms. They all rested upon cushions placed upon the tops of the hives; and to support these a strong top bar is needed. Two ⅞ bars can be made of one ⅞ bar; but any size between ⅞ and ⅞ will generally cost more to make than a ⅞ bar, because many top-bars are made out of odd pieces ⅞ thick, and require no extra cutting down. In other words, the manufacturer generally would prefer to make ⅞ bars to any thickness down to ⅞.

Aylmer W., Ont., Can.

[You estimate 4250 cells more for the ⅞ top bar than for the ⅞. This, of course, takes for granted that a ⅞ bar is practical to use. Assuming that it is, for argument's sake, it does not seem to me that this extra number of cells would materially increase the honey crop or the bee-keeper's profit. Why, there are some who prefer an 8 frame to a 10 frame because the latter is too large, they say. Then there are others who say a 10-frame hive is not nearly big enough—that it should have a capacity of 12 frames; and a few others argue in favor of 16. I do not, therefore, see that a mathematical calculation of only 4000 cells makes very much difference one way or the other — it is too small to cut any figure in the profits.

Let us now examine the other question; viz.: Is it practicable to make a top-bar ⅞ inch thick that will not sag, of the width shown in your illustration? If you will try a few of those I think you will be *thoroughly disgusted* with them. We used a plan exactly the same in principle quite extensively 15 or 20 years ago. While the top-bars did not sag, perhaps, very much, they had a strong tendency to bow *upward*. Unless the wires were drawn taut, the center support would drop out. In order to hold it in place there had to be a tension put on the wire, and this had a strong tendency to bow the top-bars upward, which is just as bad as having them bow downward to the same extent.

The ⅞ is not practicable, as you surmise. The ordinary standard lumber is one inch thick, which, when planed down, is ⅞. To cut it down to ⅞ requires setting the planer-knives where they will take off a full ¼ inch; so that from the standpoint of the manufacturer, the ⅞ bar is not quite so cheap as the ⅞; *but* we could make a ½-inch and a ¼-inch bar out of a ⅞, leaving ⅛ for saw cut; the ½-inch piece we can use for a top-bar and the ¼ inch for a bottom-bar. The Root Co. has been considering the advisability of reducing the thickness of the top-bar, but find that the frame made thus is very much weaker, for the reason that the shoulder which stiffens and supports the end-bars is nearly all sawed away, leaving only $\frac{3}{16}$ inch. This affords very little opportunity for good substantial nailing, and a weak brood-frame is an aggravation. If a ½-inch top-bar were made at all it would have to be made on the plan shown in the illustration; and even that has objections, and serious ones, from the standpoint of the manufacturer. The only way to make a ⅞-inch top-bar is to cut away the surplus stock, leaving a molded comb-guide in the center in relief; but when we were making them thus a few years ago there was a strong demand from many quarters to make the top-bar full ⅞ deep at the sides.—ED.]

BEES AND FRUIT.

Bee-keepers Welcomed by the Fruit-men.

BY TRANSIENT.

Here is the apiary of the up-to-date Mr. Albert Lane, of Vorden, Sacramento Co., Cal. This gentleman is engaged in the production of comb honey, his apiaries being located in the adjacent orchards. He raises bees for sale, and each year increases his bees twofold, and still gets his crop of honey. Being in a locality overstocked he places his bees in yards of 30 to 50 each. His neighbors are all engaged in raising fruit, principally peaches, cherries, and apricots. So eager are they all to have the busy bees visit their fruit-trees that they furnish him all the locations he needs. One orchardist makes stands for him to place his bees on; another furnishes stands and a spacious well-made shed of lumber. In another orchard a large barn is given over to his use, and he has a veritable house apiary.

Still another apiary we visited had the hives painted red, blue, white, yellow, and so on, and all under a good shed near the orchardist's house. When we inquired about so much display in colors, Mr. Lane said that the owner of the orchard furnished him paint, etc., and desired the hives to be ornamental as well as useful to him.

In another instance, bees were placed in three localities in the same orchard. The fruit-men on the Sacramento River realize that, to get sure and full crops of early fruits, they must have the aid of the honey-bees, so they are sought for and welcomed. Mr. Lane has the faculty of getting on well

with his neighbors. He soothes over their pains from stings with liberal doses of honey. He says, "As the hair of the dog is good for the bite, so is honey good for the stings." He has made himself so useful to his orchard neighbors, that, like his bees, he is told to help himself to all the fruit he wants.

In the view Mr. Lane is seated on a hive in his working suit. Just now he is mourning the loss of his helper in his bee work. His good wife has "gone before," leaving him alone with two babes to care for. We assured him that he had the sympathy of all good bee-keeper friends, and then moved on toward Sacramento.

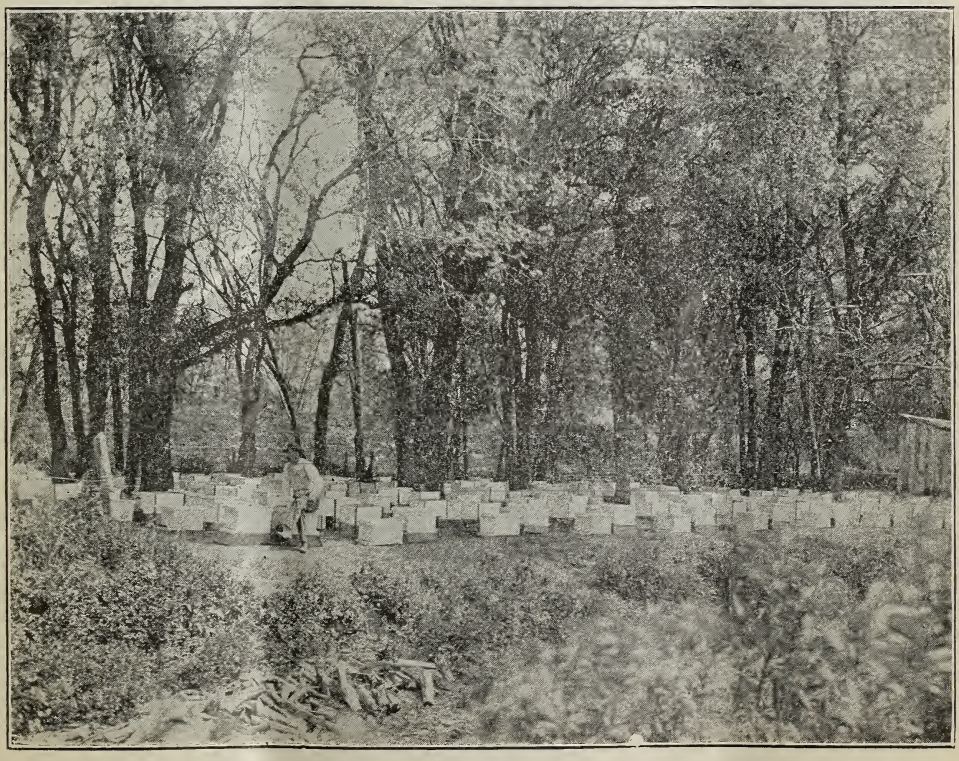
[The facts presented are valuable, as they are additional proof that there are up-to-date fruit-men who recognize the valuable work performed by the bees in fertilizing their fruit-blossoms. It is only ignorance and prejudice on the part of the fruit men, coupled with a lack of tact, sometimes, on the part of the bee keeper, that causes trouble between the interests. The region of the Sacramento Valley is not very far from a region further south where there has been a great deal of trouble between the bee-keepers and the fruit-men — not because there was any lack of tact on the part of the bee-keepers, but because the bees were suspected of being the sole means of spreading pear blight. Some late developments go to show that they are not, and that the bees do more good than harm.—ED.]

AN UP-TO-DATE BEE-KEEPER IN NEVADA.

See Cut on Next Page.

BY SOJOURNER.

This is one of the out-apiaries of J. F. Aitken, near Reno, Nevada. The apiary is as it was put in winter quarters for 1903. Mr. Aitken is a very progressive apiarist, and has every thing up to date. At his apiaries I saw many of the A. I. Root goods. His hives are all painted three coats, and equipped with the latest Root covers, and are the Root eight-frame Hoffman. The hives stand on well-made individual stands. He works for comb and extracted honey, and employs a practical apiarist the year round, but superintends all work himself. It would well pay any one interested in practical honey production to visit his apiaries, and there see his many labor-saving devices. He wires all his frames; uses foundation of his own make, and owns a German wax press. He is mastering the foul brood which has such a hold on Neva-



APIARY OF ALBERT LANE, VORDEN, CALIFORNIA.

da. The good foul-brood law which Nevada has was due to his influence, for in every way he is a practical business man. His locality is pretty well overstocked, so he has his bees in yards of about 100 each.

His principal honey source seems to be alfalfa. This is the whitest and best honey in body we ever saw. He finds a ready market east for what he produces.

[The picture suggests a number of interrogation-points. Why those big stones, one on each hive? To answer my own question, I infer that there are some heavy winds occasionally in that part of the country, rendering their use necessary. But our friend Mr. Aitkin uses quilts or cloths on top of the frames. While these are propolized down, the covers are not, thus making it a matter of necessity to put a heavy weight on top to hold the covers in place. But why lift these heavy stones? Why not dispense with the quilts and the cloths, and let the bees seal the covers down? Every stone can then be dispensed with, and the frames will be cleaner on top.

The trees on one side, the sheds and buildings at the end, and the fence on the right, are possibly windbreaks; but the fence is hardly high enough to accomplish much; and the presumption is, it is used to keep off stock.

I notice that the hives are in regular rows. Does this not confuse the bees more or less? In my own experience, where each hive is like its neighbor, and they are arranged in regular rows, robbing will be much worse, for the reason that the bees are not always able to determine who are their friends and who are foes. Young field-bees will go into the wrong hive, and are often killed. The result of this is, there is a reduction in the working force. My way would be to put the hives in groups of 1, 2, 3, and 5, each group different from the one next to it. Then I prefer, where it is possible, to have some distinguishing object near each group, such as a shade-tree or a bush. I believe that in Cuba where the hives are all alike it has been found that regular rows are not to be recommended, on account of the loss of bees, and robbing.—ED.]

HAS THE STRAW HIVE A FUTURE IN AMERICA?

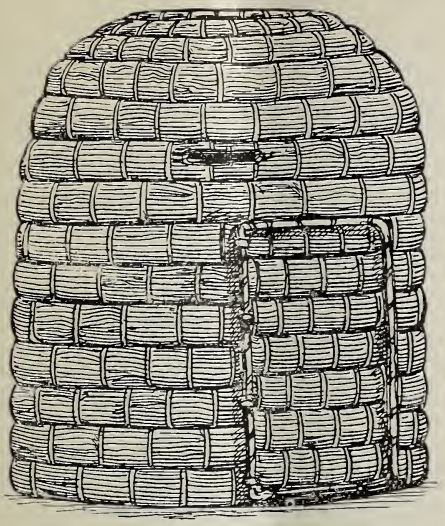
How the Straw Hive is Almost Universal in Germany.

BY F. GREINER.

It is funny, isn't it? The symbolic beehive as used everywhere, even on our honey-labels and bottles, is a hive made of straw. The bee-keepers of our time have never seen a straw hive, and might not recognize the conical thing as such should they chance to see one; and yet straw is one of the very best materials a bee-hive can be made of. Our bee-keepers here who are

AN OUT-APIARY OF J. F. AITKIN, NEAR RENO, NEVADA.

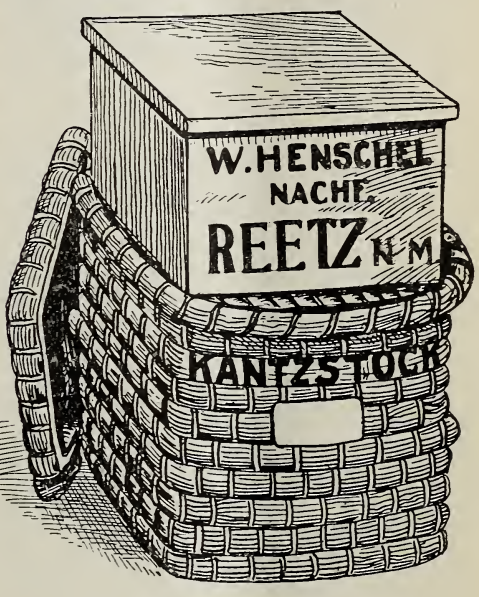
not familiar with bee-keeping in the old countries have probably no idea that hives of straw are even now almost solely used in certain parts of Germany. Gravenhorst's



A CONICAL STRAW HIVE.

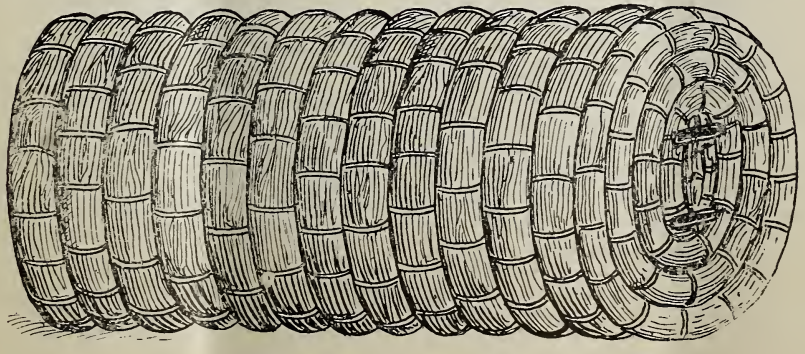
"Bogen stuelper" is one of the oldest frame straw hives; but it must be turned bottom up to take the frames out. The majority of straw hives in use were not frame hives. The writer well remembers the differently shaped straw hives in his grandfather's bee-house. It seems the honey from them, too, had a peculiarly fine flavor not to be compared with our finest section honey.

Of late, straw hives of square shape have been introduced in Germany, which admit of being manipulated exactly as a Dovetailed hive is. The walls are pressed straw, sewn through and through with split cane, and are two inches thick. A wooden frame is secured to the straw at top and bottom, the upper one having a rabbet cut out to receive the frames. As this hive is described in *Gartenrat*, a horticultural journal printed in Charlottenburg, Germany, it consists of two sections, or rings, each one holding 16 short shallow frames (7 inches deep). The hive is closed with a straw cover two inches thick. Such a hive, as the reader will see, is very simple, and ought to be cheap. It is a light hive, and could be adapted to the L. frame. It certainly would be a good hive to winter in, and I see no reason why we could not use it here with good results. They would need to be housed, however, which is a drawback. This might be overcome by using a large



KANITZ HIVE.

shade or weather-board instead. When the American bee-keepers see the need of using other material than pine lumber for hives, perhaps they will turn their attention to straw, and they will contrive ways to manufacture straw hives in a wholesale way. I hope the time will not be far distant. Of



A HORIZONTAL STRAW HIVE.

course, any kind of super may be used on these straw hives. The *Gartenrat* says on this point, a third section may be made of any odd pieces of lumber by the bee-keeper himself, and fitted out with frames or boxes, which may be used as the surplus-honey chamber.

The German bee-keepers, as a whole, the followers of Dzierzon in particular, have always been opposed to the American method of opening hives from the top. The latter are still holding to this view, and can not condemn the American style of hives in too strong terms. The introduction of such hives as described, and the Gerstung hive, and the enthusiasm with which they are received, shows plainly which way the wind blows.

Naples, N. Y., April 4.

VARIOUS MATTERS.

No Danger from Putting Honey in Syrup.

BY G. M. DOOLITTLE.

I have desired to write about many things which have appeared in GLEANINGS during the past few months, but could not find the time; and what I write now must be in briefest form — only just touching, as it were, on a few things upon which it seems necessary for me to say a word or two.

On page 219, March 1, Dr. Miller seems to think it necessary to caution the readers against my plan of using honey when making sugar syrup for feeding bees, especially where the honey has to be bought, for fear that the same might not be free from foul brood. He must have forgotten the formula or else failed to realize that honey brought to the boiling-point is free of all liability to disease. The formula is this: 15 pounds of water put in a suitable-sized vessel, and brought to a "boil." When boiling, slowly sift in 30 pounds of granulated sugar, stirring well as the sugar is sifted in. Now bring to a boil again, and skim, if necessary. When boiling, set from fire and stir in 5 pounds of honey. This makes 50 pounds of syrup, equal to if not better than honey, to use in any spot or place for feeding bees for winter stores. Now, Dr. M., if you or any one else can start any foul brood from this preparation you will be able to bring about an *impossibility*, according to my experience in the early seventies, when I cured my whole apiary of foul brood, and fed back the whole of the foul-broody honey to the bees, without any treatment of the honey more than to bring this bad honey to the boiling-point, or "*scalding* the honey," as it was then termed. I know nothing (experimentally) about foul brood since that time; but unless the foul brood of 1900 is different from that which swept the center of this State nearly clean of bees during the sixties and seventies, neither you nor any one else need have any fears about using honey in making sugar syrup by the above formula. I should not notice this, only as I am confident, after using it for more than a score of years, and after testing all other ways of making syrup for feeding bees, that the same is superior to any thing else along that line.

INDOOR VS. OUTDOOR WINTERING.

On pages 275 and 324, March 15 and April 1, I see that E. R. Root and Dr. Miller do not just agree as to my present standing on wintering bees, the editor seeming to think that I still try to winter half of my bees on their summer stands and half in the cellar. I supposed that I had made it plain that, after the loss of the early eighties, when, out of 90 colonies wintered outdoors, I found I had only 13 hives that were alive, and not enough of these live bees in the 13 hives to make three decent colonies, that I then and there changed to cellar wintering entirely, only for the few that I *must* have winter out as "playthings" to satisfy my desire of inspecting them when I desire, and hearing their merry "hum" whenever a warm day occurs in winter. That same year I had 55 in the cellar, and came out with 54 rousing colonies, so that I was able to stock up my beeless combs in fine shape before the month of June was half out. The past winter I had 7 out on their summer stands, and 3 of the 7 pulled through, but not having a flight from October 30 to April 5 so wore on their vitality that all the bees in the three living colonies would not make enough to equal those in one colony from the cellar on May 15. So Dr. Miller is right in thinking that, when I settle to a certainty which is better, I always change to the better.

BROOD OVER SECTIONS.

On page 323, April 1, I see that both the editor and Dr. Miller agree that, in putting brood over sections, "The bees will seal the sections more or less dark with bits of black comb brought down from above." They will do just that where open tops are used; but with sections having closed tops, or where wide frames are used, the same fitting close at the top, no such thing can or will result. Nearly half of my surplus arrangements have wide frames with close-fitting top-bars, each wide frame holding 4 sections. Each super is the exact size of the hive, except in height, which is the same as the sections are deep. Eleven of these wide frames go in a super, together with a thin board and two wedges, which are ⅜ thick. Now, in brief, how they are used in connection with non-swarming:

As soon as the colonies become strong enough to begin to think about swarming, or want more room in which to store honey, put a queen excluder over the hive the colony is in, and on top of this set a hive of empty combs of the worker size of cells. Leave thus till your honey-flow is about to commence, or you think that the two hives will not keep the bees from swarming longer, when you will set off the top hive, take off the excluder, and set the lower hive off the bottom board, putting the hive that was

on top on the same. Now select a frame from what was the lower hive having the least brood in it, just enough to keep the queen contented, and put it in place of the center comb in the hive, now on the stand, and then put on the queen excluder. On the excluder put a super of sections all wedged ready for work, when the bees and queen are to be shaken down in front of the hive now on the stand. I do not look for the queen nor try to shake the bees off clean, only enough so that I can reasonably suppose that the queen is with the bees so she will go in with them in the hive now on the stand When the bees are mostly shaken off the combs of brood, and I feel quite sure the queen is not with any bees which may stick to the hive, the brood is put back in the same, together with the comb taken to give place for the frame having a little brood to keep the queen contented, this hive of brood and scattering bees is placed top of the super of sections (just put on), and the bees have done their swarming for the year. If the combs that were formerly in the upper hive are from one-fourth to one-half full of honey, which the bees have stored in them while they were acting as a swarm-retarder, so much the better, for this honey will move up into the sections as soon as the queen gets well to laying. The three-eighths space left open by the wedges forms a "shute," as it were, for the bees to pass down through as the young ones emerge from their cells and wish to go out for the first time; and, on returning, they stop with the queen and in the sections, till at the end of 21 days we have the whole of the bees in the lower story and the sections, by shaking all off from the now broodless combs, and taking them away. Of course, sections are added as is necessary, generally by raising the first super up and putting one under having open top bars. In this way nothing from the brood-combs above can get into the sections, and we have a rousing colony storing all of its honey in the sections, with no desire to swarm, and with only the one manipulation, very similar to the shook-swarm plan recommended by all. Try it, doctor, and see how you like one of the plans of non-swarming Doolittle has worked out in his study along this line.

"HONEY CONSUMED IN A YEAR BY A COLONY OF BEES."

Will Dr. M. and E. R. R. turn to that table given as the amount of honey consumed during a year by a colony of bees, as given by H. Kramer, on page 376, April 1? Look at that minimum, 19.8 pounds of honey consumed during the great breeding months of the year — May, June, and July, and see if you can believe such a thing. If you are inclined to do so, just turn over to page 387, and look at that frame of brood (which is very similar to hundreds which I have had), and figure out how much honey that brood cost. Then multiply those figures by 7, as each hive will contain about the amount of brood equal to 7 such frames, if the colony is in a ten frame hive. Then multiply what seven such combs of brood cost in honey by four, as they will be filled about four times with brood during May, June, and July. After you have done this, if you know something of the cost of brood-rearing in honey you will think that Mr. Getaz's 200 pounds of honey for a year comes very much nearer the realization-point than that 19 8 does for the three months named. My figures, after years of close observation and experimenting, are as follows, for the average colony:

October—January	5 lbs.
February—April	10 "
May—July	70 "
August—September	15 "
	100 "

VENTILATION WITH CELLAR WINTERING.

I have been very much interested in all that has been said in this matter since this year has come in, and only lack of time has kept me from having a "hand" (in print) in the matter. I see that my name has been brought in quite often; but it being out of season I will only say that there is not so much difference between the editor and myself as there might seem to be — see pages 432, 433, of May 1. I have not the slightest doubt that his ventilation for that machine-shop cellar is just the thing. And I wish to go on record as saying that said *machine-shop* over the bees (or cellar) is just why he succeeds so well in wintering with his mode of ventilation — just the combination necessary for those conditions. He did not have those "happy" combinations in his other cellars, so he lost. But remember, friend Ernest, that not one in 1000 who winter bees in cellars has a *machine-shop*, and so it is safer to recommend a plan suited to the masses rather than recommend one that the masses can not well attain to. A hole dug in a side-hill for a bee-cellar, or a pit in which to bury the bees, is within *easy reach of all;* and that is the reason I have given the plan of my out-cellar to the public. The bees wintered splendidly till after the 15th of April, when they began to waste on the cellar bottom quite badly. Snow, rain, clouds, and high winds prevented my getting them out till May 2. And as their last flight was on October 30th, they had a confinement of over half a year, and I do not see now how they stood the test so well. Ten of the united nuclei gave up from loss of old bees during April and the first half of May. But all of the colonies not made up of united nuclei came through all right.

And now for something that beats all records with which I am familiar: June 2, just one month from time of setting out, one of the colonies sent out a rousing swarm, and I found others with eggs in queen cells preparatory to swarming, before I thought it possible or thought it necessary to plan to discourage any idea of swarming. To be sure, these colonies had been lying out for a week or more during hot days; but I did

not think it possible for any colony to swarm within a month of time of setting out. Hives full of bees, brood and honey (ten L. frames), and swarming within one month from setting from the cellar. Will your machine-shop wintering show better results, Mr. Editor?

Borodino, N. Y.

[Don't you remember, friend D., that J. A. Buchanan, some years ago, boiled some honey from foul-broody colonies for ten minutes, gave it back to some healthy bees, and every colony fed such syrup developed foul brood in a very short time? And, again, elaborate experiments have been conducted by several scientists of note, going to show that even two hours is not sufficient to kill the spores of *Bacillus alvei* sometimes. I refer J Genonceaux, of Europe; Dr. W. O. Howard, of Fort Worth, Texas; Prof. C. F. Hodge, of Massachusetts; Mr. Brice, an English scientist; bacteriologist J J. McKenzie, of Ontario, Can.; and T. W. Cowan, editor of the *British Bee Journal*. It is possible that, in the honey you *brought to a boil* there were very few if any spores among the bacilli; but in any case, while you may have followed a certain method of procedure without bad results, such a plan pursued by others might lead to disaster.

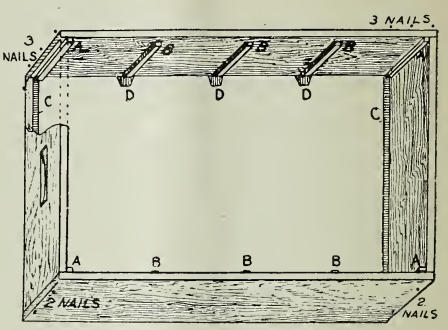
With regard to wintering half of your bees indoors and half outdoors, I stand corrected; and on the general subject of wintering both indoors and outdoors, I do not think we disagree very much; but certainly a machine-shop is not a necessary factor in good wintering. The machinery in this case *happens* to be over the cellar. The secret of success lies in the fact that the cellar is dry and very large, affording a great amount of ventilation; but when you compare our machine-shop cellar with yours you fail to note the fact that our cellar is used for wintering nuclei, two and three frame, just as they are used in the queen-rearing season, late in the fall. I am of the opinion that, if you attempt to winter such little colonies in a cellar without ventilation, even though your temperature be uniform, you might lose a large proportion of them. To sum up, where the temperature can not be controlled, copious ventilation is an essential factor in indoor wintering. With a temperature under control it may be dispensed with; but the result, I think, will be still better if fresh air be supplied.—ED.]

A T-SUPER WITHOUT SEPARATORS OR FENCES.

Some Suggestions from a Bee-keeper of Large Experience.

BY ROLAND SHERBURNE.

I take the liberty to send you a drawing of a modified T-super to hold 4¼×4¼×7-to-foot sections, which I have been using for several years with great success. As I am not a new hand at bee-keeping, but a veteran, and, last year, raised 25,000 lbs. of honey from one apiary, about half comb and the rest extracted, without hiring any outside help, I think my views are entitled to consideration. I have nothing patented, and no ax to grind; but if I can give my fellow bee-keepers a new idea, or simplify the production of honey, I ought to do so.



Years ago I vowed I would never raise comb honey until I found some plan that would do away with brace-combs, division-boards, followers, wedges, thumbscrews, and the innumerable "contraptions" that have been made, sold, and used by the long-suffering bee keepers.

Like all bee-keepers I must use something of my own make, to suit my own notions, so I have changed the T-super to what I will call the modified T-super.

In the ordinary T-super, holding 4 rows, 7-to-foot sections, the outside rows, or 8 sections, could not be well filled on account of a lack of a full bee-space outside of sections, while the inside sections were all right. I was raising two kinds of sections—the full weight and light 11 or 12 oz. in the same super. (I will say here that I never used separators of any kind.)

This had to be changed; so, instead of making the super 12 in. wide, inside, I made it 12⅜ in., and nailed cleats or strips of wood, 4¼×$\frac{3}{16}$ thick, ⅜ in. wide, 5 strips on each side. These strips held the rows of outside sections $\frac{3}{16}$ inch away from the inside of the super, and left, inside of the cleats, 12 in. clear for the sections. This arrangement gives me well-filled outside sections, and these sections, 4¼×4¼×7-to-ft., will come nearer averaging a pound in well-filled supers than any others I know of.

Notice these shipments: 12 cases, 336 sections, 327 lbs. net; 18 cases, 504 sections, 500 lbs. net; 16 cases, 448 sections, 445 lbs. net; 4 cases, 112 sections, 113 lbs. net. This is the kind I send out, and I have to be careful that the cases do not average too much, with the last year's crop.

Again, I have no thumbscrews nor screws of any kind — no wedges nor followers. One of the side boards is nailed securely to the ends; the other side is nailed with two 6 penny nails at each end.

When I fill the super I just take a hammer or strong knife, and loosen this side a

little, fill in the sections, and close it up again. After the super has been opened a time or two it works readily, and the grip of the nails is sufficient.

The sections rest on T tins, movable, and tin strips along the ends of the super. T tins rest on tin or galvanized-iron snips that are large enough to project out past the cleats nailed to the sides.

I first take off two shavings with a rabbet-plane, on the bottom, so that the tin strips and snips will "drop in" and not be more than flush with the bottom of the super. I use wood zinc honey-boards and a ¼-inch bee-space above the sections. These supers should be made accurately. All the boards cut 4 9/16 in. wide; ends 12⅜ long; sides 19 in., and sawed in a miter box or saw table. Make a sizing-board 17¼ in. long. This will give you inside length for super.

Nail one side to end flush, and put in the sizing-board. Bring the other end piece up to it and nail. Do the same with the other side, and all the cases will be the same, inside measure, whether the lumber used be thick or thin. All supers should be measured inside to be accurate. These supers will tier up nicely.

I will say here that wood strips to fill the top seam between the rows of sections make cleaner sections, after they are filled with honey, than if T tins are used for the same purpose.

This is a short sketch of the super I use. It can be manipulated very easily; has a minimum of propolis; holds the sections firmly.

I will say further that I have a closed-end frame hive just 17¼ inches long, inside measure, frames 7 inches deep, to go under these supers, that has no following board nor wedges to get glued up.

If you would care to know how I make this hive I can give you the description in another letter. I have been using it for several years, and will make one hundred more this spring.

Lone Tree, Iowa, April 9.

[The idea of providing a space between the outside of the outside row of sections and the super side is one that S. T. Pettit, of Aylmer West, Ontario, has advocated for some years back; but instead of having an open space he provides what he calls a divider, bee-spaced on each side, and perforated with holes. This permits of a clustering-space between the outside of the outside row and the side of the super. The reason why the outside surfaces of the sections in the old-style supers are not as well filled out is because there is not room enough—too few bees to keep up the necessary warmth for comb-building. By using wider supers (or narrower sections) and giving clustering room, these outside surfaces will be as warm as the spaces in the center rows of sections.

Mr. Sherburne's experience is quite in line with that of many others who have followed Mr. Pettit. The reports were so uniformly favorable that the Root Co., some two or three years ago, adopted this plan in all their plain-section supers by putting in an extra fence which in effect is the same thing as the Pettit divider.

But our correspondent uses no separators, much less fences. While it is possible to get along without them, and some successful bee keepers do so, the great majority have sooner or later begun using separators or fences, for the simple reason that so much of the non-separatored honey will not crate for market. The average beginner and the average bee-keeper had better not attempt to get along without them, if the experience of the great majority is any criterion. Then I have talked with commission men in New York, Chicago, Albany, and elsewhere, and they all condemn non-separatored honey.

Now, having discouraged the no separator idea, I do not wish to convey the impression that Mr. Sherburne can not get along without them; neither do I wish to imply that his honey is not cratable or not marketable.—ED.]

REPORT OF THE PHILADELPHIA BEE-KEEPERS' ASSOCIATION MEETING.

Held at the Root Apiary, Woodstown, N. J.

BY ONE WHO WAS THERE.

[The A. I. Root Co. at Philadelphia having bought an apiary of black bees which it intended to transfer and Italianize, invited the members of the recently organized Philadelphia Bee-keepers' Association to go to Woodstown, N. J., June 11, where the bees were located, and help eat a Bible supper of milk and honey. The round-trip fare was $1.00, and quite a company of bee-keepers were present to do honor to the occasion. A report has been sent us, which we take pleasure in presenting to our readers.—ED.]

The association took the 1:30 train at the Market St. ferry for the Woodstown apiary on Saturday, June 11, the ride being through a beautiful section of New Jersey, and a good hour's ride brought us to Woodstown. This thriving village, situated about 26 miles from Philadelphia, is composed of 2000 inhabitants, one of the oldest villages in the State, and situated in one of the most prosperous agricultural districts in South Jersey. Two carloads of milk are shipped from this station alone every morning in the year. It is certainly a location described in the Bible as a "land flowing with milk and honey."

The Root Co. bought out Mr. J. D. Coles' apiary at this point in the spring, and at their invitation the Philadelphia bee-keepers met with the Philadelphia manager of the company on this occasion, and they were promised a good Bible supper of plenty of fresh milk, Jersey butter with rolls, and fresh honey cut right from the hives.

As this apiary was all in ten-frame two and three story tiered hives of the Langstroth pattern, all black bees, the Root Co. was transferring for several days these bees into the eight-frame Dovetailed hives, and Italianizing at the same time. This

being in the midst of the honey flow, each hive contained bees enough to represent two good ordinary colonies; and it was a sight that the bee-keepers said was long to be remembered, and they had never seen any thing like it before.

After meeting in the little building, and being called together by President Dr. Townsend and Secretary F. Hahman, they immediately donned veils and went out into the apiary, where Mr. Selser and two assistants had been busy at work all the morning transferring the bees. The air was fairly black with the little dusky workers; and as each hive had contained (having been left to itself) nearly a thousand drones each, these buzzy fellows along with the workers were making it impossible to hear an ordinary conversation ten feet away. After watching the process for half an hour, the bee-keepers gathered around, in a big circle, one of the hives which had been transferred early in the week, and Mr. Selser passed the frames out first to the president, who passed them on to the various members, creating quite a rivalry against the one who drew the lucky card on whose frame the queen was located. The queen was often found on the bottom-board or body, and these were also passed around to the members with the frames. Mr. Selser, during this time, smoked the top stories which were located over the honey-board. When the queen was found, a yell was sent up by the members.

Mr. Reeves, one of our older members, found three different queens. The others were scattered around among the other different members, no member finding more than one, and some not any. These black queens were immediately killed, and the hive again set in order and a new queen introduced later at the regular time. With the bees transferred, so much of the honey had to be cut out in chunks that the bee-keepers were grieving over the loss this was to the trade generally, saying it might have been saved early in the season and the honey put in proper shape to sell. Outside of a few stings to the operators over the hive, none of the members were stung, which was a remarkable fact, owing to their being all black bees and so greatly disturbed.

There were some new members who attended this meeting, and every move that was made filled them with astonishment and wonder. The veterans who had kept bees for years said it was one of the most delightful and interesting meetings they had ever attended.

At five o'clock the members adjourned from the apiary to the honey-house and partook of the truly Bible supper; and the way the milk, rolls, and big chunks of honey disappeared, showed that they heartily enjoyed it. Mrs. Harold Horner, formerly of Mt. Holly, who acted as hostess with Miss Margaret Selser, was kept constantly busy supplying the various calls for these delicious articles produced right at this place. The peculiar feature of this supper was that nearly every thing provided was raised within a mile of the place where it was eaten, including the rolls.

The bee-keepers took the 6:06 train back to Philadelphia, and decided that this was the most novel and peculiarly interesting meeting they had attended for a long time, with many thanks to the Root Co. and Mr. Selser and Mr. Horner for their genial hospitality.

SEED-GROWING FOR BEE-KEEPERS.

A Friendly Slap at Editors Hutchinson and Root.

BY W. K. MORRISON.

Bees and seed-growing are one and inseparable; yet how little do we hear about the seed-growing!—I mean in the bee-journals. But before beginning my suggestions let me digress a little to have a slap at two well-known editors. One resides in Flint, Mich.; the other in Medina, Ohio. Both have told us the introduction of the intensive system of agriculture means hard times for the bee-keepers. Almost in the same breath these famous editors tell us that out in Colorado, Utah, Nevada, Idaho, Arizona, and New Mexico, where an *intensive* agriculture is followed, is just the place for bee-keepers. "O consistency! thou art a jewel." In Colorado a man cultivates from 10 to 20 acres to get a fair living, while in Ohio or in Michigan anywhere from 100 to 200 are necessary to do as well. And yet both of these fearful editors tell us intensive agriculture is bad for bee-keeping. Whew! where are we at? I will begin again.

Scotland and Saxony are both highly cultivated countries, pursuing intensive agriculture under great difficulties, yet both are excellent honey-producing countries, probably much superior to Ohio and Michigan. In Ohio the yield of wheat is 11 bushels per acre; in Scotland, at least 33. In most other crops the discrepancy is even greater. I once made a tour of Michigan, and what met my eye was a very extensive agriculture, the only exception being at Kalamazoo, where some natives of Holland were practicing intensive celery culture with great success. Certainly there is plenty of room in both States for intensive agriculture, but it hasn't arrived. I want to make Messrs. Root and Hutchinson feel humble, and prepare their minds for the new agriculture, which will be the salvation of both States in the good times coming.

SAINFOIN.

Though I traveled considerably in both States I did not see a blade of sainfoin — a crop that corresponds very closely to the alfalfa of the West. I imagine that, in most respects, it is the more valuable plant of the two. It produces honey in quantity and quality equal if not superior to alfalfa, and that, too, in cold wet countries — something

alfalfa never does. It is grown in much the same manner as alfalfa. Possibly it will do equally well. Burpee the seedsman says it will succeed only in the South; but he also says crimson clover grows only in the South, whereas it succeeds very well in Nova Scotia, a very long way north. Then along comes the Canadian Experimental Farm, and says it does very well in Ottawa. Better boom it, Mr. Editor, and keep these wandering bee-keepers at home growing seed and producing huge piles of fine comb honey. Don't let them wither away like Rambler in Cuba, but set them to work bringing into fashion *intensive* agriculture.

Sainfoin is an important European crop, grown almost everywhere. I think it advisable to send straight to Europe for the seed, to get it fresh. Watkins & Simpson, 12 Tavistock St., Covent Garden, London, sell English-grown seed, and Messrs. Vilmorin Andrieux & Co., Quai de la Megisserie, Paris, sell French, while Italian seed may be procured from Messrs. Damman & Co., San Giovanni a Teduccio, near Naples. The Spanish kind, known as "sulla," ought to prove useful in California, Arizona, and Texas, as it is semi-arid in its habit. What is to hinder bee-keepers from growing sainfoin for seed purposes, and booming it a little in their own neighborhood? They need not be too modest and retiring.

WHITE CLOVER.

In Ohio, Michigan, Illinois, and Indiana, and very possibly other States, white clover ought to be grown by irrigation in many cases. It is a grand plant, but not a drouth-resister. If you, Mr. Editor, have never seen white clover under irrigation, you would be astonished to see it under such conditions. Personally I believe it would pay to grow white clover under irrigation right in Ohio; at least the seed-grower ought to grow his patch under irrigation. This is better than looking about for long-tongued bees. It is easier. The yield of white clover under irrigation is enormous, and of course the quality is XXX. Possibly, also, the yield of nectar is increased under water culture. Worth thinking about, isn't it?

ARTICHOKES.

Notwithstanding the fact the artichoke is a grand food for hogs in the hog-producing States, it seems to be but little known. It not only furnishes the very cheapest hog food, but tends to keep these animals in health. Prof. I. P. Roberts praises the artichoke very highly, and so do other eminent agriculturists; but still it languishes. Evidently it needs some one to sound its praises; and as it is a bee-plant, why not we bee-keepers do this for it?

HORSE BEANS.

In his write-up of California and its bean fields, ye editor didn't catch on to the value of the bean to Eastern agriculture. Horse beans form an important crop. They are principally used to feed hard-worked horses, and for this purpose are not equaled by any other food. These beans can be cultivated and harvested just as wheat is, but possibly in drills would suit the United States better. Dr. Moore, one of the editors of the *Country Gentleman*, indorses them for York State, and possibly they would be an acquisition in Ohio and Michigan. Anyway, it would be worth while to experiment with them.

RAPE.

The rape-plant has been successfully introduced into the United States, but is not as extensively planted as it ought to be. I think there is a chance here for those bee-keepers who are favorably situated for growing it for seed.

TAGASASTE (TREE ALFALFA).

The only reference I have seen in GLEANINGS to this great honey-plant was by the lamented Rambler. Those Californians who complain of lean years should try it and report. It ought to prove a very desirable acquisition in some parts of the United States. I am anxious to know how it succeeds in the Southwest.

RED RASPBERRIES.

There is hardly any plant, not excepting white clover, that will excel the common European raspberry as a honey-producer, either in quality or in quantity. The red raspberry furnishes a syrup that stands probably without a rival, and raspberry "vinegar" is a grand drink. Why would it not pay to grow the raspberry in suitable localities for these particular purposes — the more so as raspberry syrup is the best substitute for honey? and where there is a local trade the same people buy both.

HAZELNUTS, COBNUTS, AND FILBERTS.

The growing of these nuts in the United States is an "infant industry." All three are pollen-plants, and, blooming early, do a great good to bees.

I could easily add a lot of other honey-plants for the reader to think over, but I shall be well satisfied if the bee-keepers do only a small part in making these things *fashionable*. Some GLEANINGS readers are in a position to work up this idea, and possibly some are at work on it.

[While there is an apparent lack of consistency in the statements made by Brother Hutchinson and myself, yet in reality there is none. While I can not be sure just what Mr. Hutchinson has said, yet I think you will find that, where I have spoken of intensive agriculture cutting down the yield of honey, I had in mind those localities that formerly had a much greater proportion of wild or pasture land than now; and consequently clover (for the remarks had reference to the eastern portions of the country) would be less abundant, while grain and hay would receive a larger share of the acreage.

There are immense possibilities in the

development of some of the new plants. It remains for the experiment stations to show the possibilities so that the rancher and the farmer can put these demonstrated possibilities into good hard dollars.—ED]

DR. MILLER'S BOOK; THE SECRET OF GETTING SECTIONS PERFECTLY FILLED OUT.

Dr. C. C. Miller:—I have been diving into your "Forty Years among the Bees" for some time, and must confess to you I have been more than repaid the cost of the book. I am interested in comb honey, having about 30 colonies—some pure Italians—but they do not work on red clover for me. Could I possibly get a strain that will do it? I want to be able to produce section honey like the picture I see in the A B C book, page 99, evidently a picture of some one's honey. I have never been able to do any better than that on page 98—No. 1. My bees just will not fill out the section. I am using the 4×5 plain with fences this season, and am delighted with them. I had much trouble last season in using the 4¼ and no separators with bulged comb. I am a subscriber to GLEANINGS, and should be more than obliged to you if you would help a Tarheel.

Charlotte, N. C. GEO. M. PHIFER.

[Dr. Miller replies:]

I'm not sure that I know the exact secret of getting sections beautifully filled out, although I have produced thousands of them. I'll give you the combination, however, as nearly as I understand it: A heavy flow of nectar, a strong force of bees, the colony somewhat crowded for room. Try those three things and see if you don't get satisfactory results. The first and second are desirable conditions under all aspects; the third—well, if it takes too much crowding to get sections well filled out and sealed, I'd rather do with something not quite so fine; for too much crowding is likely to lessen the crop at least a little, although it may increase the crop of wax, making the bees plaster wax where not needed. It may also set the bees to thinking of swarming. Indeed, it is probably wise at all times to give the bees too much rather than too little surplus room; yet I have seen sections filled out and finished up beautifully when I thought the bees had abundance of room.

Yes, you can have bees that will at least do better than the average on red clover, some bees especially distinguishing themselves in that direction. And I suspect that bees that do better than the average on red clover will do better than the average on other plants. Try a queen of the red clover strains advertised—an untested one, perhaps. You may strike on one not much better, if any, than your present stock; and you may strike on one that will boost you away ahead. C. C. MILLER.

Marengo, Ill.

BEE PARALYSIS, AND THE USE OF SUBLIMATED SULPHUR.

In July, 1903, I bought a select tested Italian queen from one of our most renowned American queen-breeders. I introduced her successfully, and gradually built the colony up by adding brood-combs until about the end of August the hive, a one-story ten-frame regular Langstroth, was full of bees. In September I noticed many dead bees in front of the hive, which accumulated from day to day, until in October the colony was reduced to a nucleus having only a few bees left, and the queen. I had clipped the queen as soon as I had received her, so that I could easily recognize her.

I came to the conclusion that here was a case of paralysis, and, strange to say, the only one case in a yard of about 30 colonies.

One evening I took about 2 lbs. of flour sulphur in a burlap sack, and dusted, by shaking the sack, just enough sulphur on all bees and combs so that every thing was pretty well covered with the yellow sulphur color. Then I took this hive and changed location with a prosperous hive full of bees. The next few days I noticed again a few new dead bees on the new stand, but no dead bees on the old stand. After about one week there appeared no more new dead bees on the new stand of the paralytic colony. This colony did not accumulate sufficient stores for wintering. I fed with plenty of sealed honey.

This spring, when I examined the colony in February it was weak, reduced to about two frames of bees and little brood, There was plenty of honey left. May 11 they are doing better, having some five combs of bees and brood. I do not notice any more new dead bees, so the disease seems to be gone.

I reared two young queens from the above queen, which are doing fairly well—about as well as any average colony in the yard. But I am afraid of this stock, and will discard it by requeening.

The colony which I put on the place of the paralytic colony in the fall of 1903 had a Carniolan queen bred to an Italian drone. This colony never showed any sign of disease, of which I was afraid on account of the change of position. It wintered well, and came out this spring as one of my best colonies. OTTO LUHDORFF.

Visalia, Cal., May 11.

[I would not advise keeping the queen of a paralytic colony. I think we have pretty good proof that this disease is somewhat hereditary; and if the queen is retained she is liable to transmit it to the bees, even after they have been cured by sulphur. To

breed from such a queen is only increasing the risk of its being spread to other stock. —Ed]

THE FIRST SHALLOW HIVES.

In all the various articles that have appeared recently in Gleanings on "shallow hives" I have not seen any mention of the Stewarton hive as made and used in Scotland fifty years ago. This seems to me to be the old original, and must have been in use years before Mr. Heddon and Mr. Danzenbaker brought out their hives. I should fancy that Mr. Heddon had gotten his idea from the Stewarton, and had improved on it to suit the more modern ideas and needs. The original Stewarton was octagonal, about 14 inches in diameter, 6 or 7 inches deep, and 2 or 3 body boxes were used, with as many supers of 4-inch depth as might be required; and as movable frames were hardly known then, bars only were used. Later on the hive was improved, and it was made square with frames; but the principle was the same. These square ones were often made ornamental; but this was at a time when bee-keeping as a business was scarcely thought of — at least in the old country — and bar-frame hives were used only by the few, while the still older-fashioned straw skep was the only hive used by the many.

A description of the Stewarton hive may be found in "Hunter's Manual," or "The Apiary," by Neighbour, both published in England some thirty years ago.

Chas. E. Norton.

Moncton, N. B., Canada.

[Some eighteen years ago or more, there was considerable discussion about shallow hives. At that time the Stewarton hive was referred to quite frequently. It is described and illustrated in Cheshire's Bees and Bee-keeping. But the first shallow hives were in use long before the Stewarton. They have been used in Germany for centuries. The Stewarton hive, though, differed from the Heddon and the Danzenbaker in that it did not have movable frames — only bars.—Ed.]

A VIRGIN QUEEN FIVE MONTHS OLD.

As a bee keeper and a reader of Gleanings, allow me to put a few facts before you. Out of a batch of young queens I made in January, there is one which is not yet laying. I have always noticed that, from her wedding-flight, the copulatory organ was still attached to her body; and week before last I caught the queen and drew out the appendix to see if she was going to lay after three months' time, and till now she has not done so, though she looks as lively and well formed as the others. I think I'll have to kill her.

I read in Gleanings that the honey crop in California and Cuba is a failure; but in a long experience with bee keeping in Cape Haiti I haven't seen such a bad year. We had to feed all weak colonies in May, when last year at this time honey was coming in freely, and we were making our fourth extracting (our season lasts from the middle of November to June or July)

The frame of brood of Mr. Victor, p 387, is not a wonder in Haiti. I can say it is the rule, for most of our queens are from your stock. J. Baptiste.

Cape Haiti, Haiti, W. I., May 14.

[As a general thing, virgins more than three weeks old will never lay. We are in the habit of killing off any that will not lay inside of two weeks. I think we may conclude that a virgin five months old is structurally imperfect.—Ed.]

PARIS GREEN ON COTTON KILLING BEES.

Can you give me some advice as to the effect poisoning cotton with Paris green will have on bees? Will it affect the honey?

There seems to be considerable excitement in the boll-weevil district of Texas over the practice of poisoning cotton with Paris green to exterminate the boll-weevil. Bee-men in general think it will also exterminate the bee business. I thought you could probably tell me something about the result of this, as I notice a great deal of writing on the subject of poisoning fruit-trees in the North. It seems from what I can learn that it invariably kills the bees that go to those orchards in reach of nectar. J. M. Davidson.

Ditto, Texas, June 7, 1904.

[If the cotton is in bloom at the time the Paris green is applied, it will kill the bees by the wholesale. Perhaps you can induce the cotton-men to spray on certain days, and then confine the bees on those days with wire cloth, if it is possible, until the spraying is over and thoroughly dry. A good deal will depend on how strong the planters use the Paris green; but the presumption is, it would have to be used as strong as it is on fruit-trees; and if so it will kill bees in the same way.—Ed.]

A BEE-CELLAR FOR ARKANSAS — HOW TO CONSTRUCT.

I am intending to build me a cellar this summer. Our land here is a light sandy soil with a red-clay subsoil. When we have a good deal of rain the water will rise in the cellar. Will you or some of your readers give me a good cheap plan for making a cellar that will stay dry? I should also like to know what kind of clover will be best suited to that kind of land. What do you think of wintering bees in a cellar where the temperature in winter ranges from summer heat to 6 below zero? The weather is so changeable that bees consume a great amount of stores.

G. F. Hatch.

Belleville, Ark., June 6, 1904.

[With your conditions you had better by far not make any cellar at all. Weather

below zero does not necessarily affect bees wintered outdoors. It is the continued extremely cold weather, without any flights at all for four or five months, that is hard on bees wintered outdoors. You had better winter outdoors in double-walled hives. Your bees will then come out fresher and stronger. If water has a tendency to rise in the cellar, the only way is to put in a good-sized drain around the wall, and leading from the cellar to a drainage point below the bottom of the cellar.—ED.]

DO LIZARDS KILL BEES?

Is it customary for lizards to eat bees? I was viewing with great pleasure the first flight of my bees on a fine day, the 3d of last April, when out from under a hive slipped a lizard at least a foot long, and at once pitched into the thickest stream of the happy little fellows, devouring them in great haste. The bees seemed not to pay the least attention to the wide-mouthed monster. I called my boy, who went after the despoiler, literally with a "sharp stick." Please give me some light on this enemy of my pets. J. N. J.

Arcata, Cal., May 4.

[I have seen lizards in some of the California apiaries. They appeared to be very tame, and inoffensive. Possibly the reason of their being so tame was because of their being well fed. As a general thing, California bee-keepers regard them as harmless or as a curiosity rather than an actual damage to their interests.—ED.]

POPPIES—A WARNING.

I see on p. 499 a letter from J. A. Leonard, asking about sowing an acre of poppies. Now, Mr. Editor, if he has poppy seed to sow an acre, I hope he will not lose one seed, but burn it. I was raised on a farm in the eastern part of England, the finest farming country in the world, but it is cursed with the poppy. The grain-fields would be entirely destroyed by it. Day after day when I was a boy I pulled poppy, and it almost gives me the headache now to think of it. If any one else asks you about poppy, say *no!* H. MANNING.

Raysville, Ind.

[We have had other reports going to show that the poppy — that is, the kind that produces opium — is injurious to bees, to say nothing about the misery and degradation it brings on the human race.—ED.]

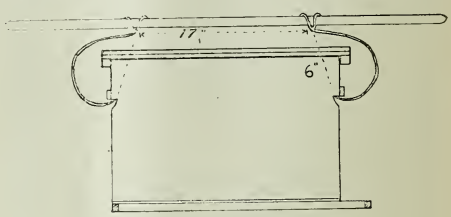
THE HOFFMAN FRAME.

I have just read what W. Z. Hutchinson and others have to say in the last issue of the *Review* regarding the Hoffman frame. I can't agree with them that it is not a good frame. In warm weather I can pick my frames out of the hive with my fingers without the use of any tool. Frames should not be handled in cold weather as a rule, any way. I agree with Mr. Green in not being friendly toward the division-board as you made it a few years ago. It is soon pulled to pieces. In theory it is all right, and would be all right in practice if no bees were ever allowed in the hive. Hives I would rather have with corners halved together than the lock corner, on account of being more readily kept together at the top corners. HARRY LATHROP.

Bridgeport, Wis., June 8.

A SIMPLE, CHEAP, AND EFFECTIVE HIVE-CARRIER.

I send you a sketch of a hive-carrier that I made. I took a fork-handle and bent some irons in the shape here shown, and sharpened the ends to hook in the hand-hole of the hive. I make the handle long or short for one or two men. The staples in the handle should be 17 inches apart for a Root hive, and 6 inches from staple to the end of the hook. You can lift up, carry, and set a hive down and not disturb the



bees. I carry mine with one hand; have the handle long, and a man can walk with ease at each end. F. W. HOWE.

Baldwinville, N. Y., March 28.

TWO QUEENS IN ONE CELL.

Under Heads of Grain I find that a writer claims to have found two queens in one cell. You request your readers to report if any thing like this has happened to any one else, so I will let you know what I am able to say from my experience. Some weeks ago I took queen cells from a hive which had swarmed a few days before. Among these queen-cells I found one which seemed to be but one only, but it contained two queens, and these queens were separated by a very thin wall Practically there were two cells; but, connected together, they looked like one. Probably the queen-cell in question was constructed in the same manner.

BRO. ALPHONSE VEITH, O. S. B.

St. Meinrad, Ind., June 8.

SAPOLIO FOR REMOVING PROPOLIS.

I notice on page 554 Mr. S. G. Kilgore says he has used sapolio for removing propolis from the hands with success. I wish to say the same Yes, I think there is nothing better than sapolio for removing this objectionable material from the hands, and it does it quickly too.

Washington, D. C. H. F. CARL.

BEES ON SHARES; NO WRITTEN AGREEMENT; TROUBLE BREWING.

I am expecting to have some trouble with a man; the trouble arising from a few bees on shares — not just that either. He had a few bees. I bought a few near him, with the agreement that I should see to his bees when I came around. He, in return, was to hive any swarms that might issue in my absence. There was no written agreement, as I thought he was a gentleman. Since then, he has claimed part of the honey my bees made, which I gave him, but decided to get my bees on some one's premises other than his, which I did, but he now claims that I have taken a part of the bees that he was to have for the keeping of them.

What I wish to know is this: Should I ask the bee-keepers to help me if he should sue? I have been poor, and have not joined the National, but will join if I can get help should I *need* it. I would rather take the bees back that he contends for, and give them to him rather than have trouble with him. J. B. O.

[The keeping of bees on shares without a written agreement very often leads to *dis*-agreement. As I understand the situation your neighbor was to hive swarms from your bees in your absence to offset your labor of looking after his bees in *his* absence. Your neighbor assumed that he was to have half the bees and half the honey, and you, on your part, rightly assumed that the proceeds from each lot of bees were to go to the owner of each lot. No court could hold or would hold that you are in duty bound to give your neighbor the lion's share. If your labor more than offset the labor of the neighbor, then he could claim nothing in the way of bees or honey from your colonies. If I have stated the facts correctly, I would contest his right to appropriate your bees or any part of them, for it is not always wise to give a man every thing he asks. To do so works an indirect injury to society, in that he will be bold to "claim the earth" with every one, and it may be necessary to teach him a lesson.

The moral of this whole thing is that there should be an agreement in writing; talk over the general plan of division in the first place if there is to be any, and then if you can not agree no harm is done. The National Bee-keepers' Association could not help you, probably, even if you were a member *before* the trouble began. In no event can it render aid in a case where defendant joins the Association *after* he gets into trouble.—ED.]

A LITTLE CITY, DOOLITTLE AVENUE.

I have just visited the famous queen-rearing yards of Mr. J. P. Moore, Morgan, Ky., and certainly they are worth visiting. He has about 500 nuclei of three frames each for testing and keeping his young queens. He also has some 25 full hives for his queen-mothers and brood-rearing. All his stocks are of the purest and best Italians, selected for the most desirable qualities in bees. They are gentle, first-class honey-gatherers, beautiful in color and form, uniform in markings, and are bred to the highest standard of bee culture. Mr. Moore raises his queens in queen-cups, by the Doolittle grafting method, drawn out by full colonies. A queen which the bees are about to supersede is placed in the same colony, where he has his queen-cells finished. Mr. Moore claims that bees in this condition will build better and larger cells, and supply the queen larvæ with more royal honey than when they are queenless.

He exhibited bars of queen-cells with 16 to 18 in each row that, for size, beauty, and uniformity I have never seen equaled. The young queens from cells so constructed are long, yellow, and produce bees that stand at the highest grade as honey-gatherers. He sold last year over 2000 queens, and his orders this season are larger than ever before. His great city of hives and nuclei is beautifully located south and east of his residence, and laid out in streets and blocks like a human city. The main avenue, running east and west, is called Doolittle Avenue, and the view from either end is just grand. Fields of white and red clover stretch away to the verdant hills. He has Italianized all the bees kept by others for miles around, so as to secure purity of his queens. He is a genial Christian gentleman, and welcomes a visitor to his home with true Kentucky hospitality. My visit will long be remembered.

Walton, Ky., June 6. L. JOHNSON.

HOW TO TREAT HONEY THAT PERSISTS IN CANDYING IN 40 OR 50 DAYS.

Here in Southwest Texas we have very fine honey, but we have a great deal of trouble with it on account of its granulating so quickly. We have a big demand for comb honey packed in 60-lb. cans with 8 inch screw-top. I think I understand the process of heating in order to keep it from sugaring, but that is not a success with us, for it keeps it only about 40 or 50 days, which is not sufficient time. Is there any way I could use glucose in the honey to prevent sugaring? I do not wish to use the glucose in order to cheapen the honey, for glucose would cost as much here as I could get for my honey; and I would state on my labels that the honey contained glucose in it for the purpose of keeping it from granulating.

If you know of any way to keep honey from turning back to sugar, say for 90 days, kindly let me know. J. N. LONG.

Pearsall, Tex., June 9.

[I would advise bringing the honey up to a temperature of 130 or 140, and keeping it there for several days. A temperature of 160 for a few minutes would not be nearly as effective. If you can keep the honey at 140 over night you will find the results probably more satisfactory. In case long-continued low temperature does not keep

the honey liquid a sufficient length of time, put in two or three per cent of commercial glycerine. Do not use glucose, as you will ruin your trade if you do; and, besides, 25 or even 50 per cent of glucose would not prevent granulation.—ED.]

SHALLOW HIVES FOR BROOD-NEST AND SUPER; HOFFMAN FRAMES AND FENCES; CARNIOLANS AS HONEY-GATHERERS.

Mr. Root:—I have seen a good deal lately about shallow hives and several other things of much interest to me, as you know your firm has made a good many shallow hives for me, and I have now over 1200 in use. They are of the six-inch depth. You seem to think it impracticable to use the same depth both for sections and brood-nest; but I assure you it is not, however, in connection with the ordinary inside furniture of supers, as I use it. Simplicity is its main feature. A narrow tin strip is nailed to the inside edge of the ends of the hive. This is for the slats to rest on. A thin board is used at one end to tighten up the ends of the fences. Twenty-eight 4×5 sections are put in a super, and a half-inch board fitted down inside the wood rabbets. This completes the arrangement for comb honey, and I know it is simple and good. Two fences are used each side of the super, or ten in all. As a section-honey getter none excel this simple and inexpensive super; and with a strong brushed swarm in a hive of the same size it is hard to beat. I indorse fences. Shallow hives are the ones for me in producing extracted honey. They are of equal value. I have had much experience with many kinds of hives.

I see that a good many condemn Hoffman frames. I do not see how any intelligent specialist can waste time with unspaced ones. True, they are not perfect; neither are those who condemn them. Propolis is bad in this locality, but unspaced frames are worse. I see smokers come in for a share of criticism, and I think it is true that they are not fastened strongly enough to the bellows-board. One tack is not suffic ent in the valve leather, and the curved snout weakens the force of the blast. With me the Crane is the best. Straight-blast Bingham is also good.

Mr. Crane's article on the importance of getting bees started right struck me very forcibly. For over two years I have had one yard of pure Carniolans, and they are said to be bad to swarm; and with the idea of counteracting that tendency I have worked to get them started off at honey-gathering with a vim before the time for swarming came on; and the result has been that, though last year was bad for swarming, yet only 18 swarms came off, and this year not one; and the good thing about it is, these bees are noted as being the most wonderful honey-gatherers in the whole country, working very freely when others are doing nothing, and I believe it due to the proper starting they always get.

Yes, I think excluders always hinder the work of the bees, some to a much greater extent than others. I do not use them, either on extracting or comb-honey hives.

J. E. CHAMBERS.

Vigo, N. M., June 12.

[W. K. Morrison has for some time advocated making the hive and super of the same depth for the sake of convenience and simplicity. Our friend Mr. Danzenbaker tried it on quite an extensive scale, but finally abandoned it, making the brood-nest about a half deeper than the super, and he feels satisfied that better results are thus secured. But if you use two hive-sections for a brood-nest, the same as advocated by Mr. Heddon and Mr. Hutchinson, you would probably obviate some of the objectionable features.—ED.]

HONEY VINEGAR; SOME INTERESTING PARTICULARS CONCERNING IT.

That analysis is not conclusive. Vinegar-making depends entirely on perfect conditions, whether all fermentation of sugar be finished before the fermentation of the alcohol into vinegar is started, or whether the fermentation of sugar into alcohol and alcohol into vinegar was going on at the same time, which always causes a great loss. Very often even a third kind of fermentation is going on at the same time, by which the vinegar is changed into carbonic acid and water. This fermentation is generally caused by germs of decayed organic matter.

To obtain the best results in vinegar from the fermentation of sugar, especially honey, it is absolutely necessary that the fermentation of honey into alcohol be perfectly finished before the fermentation of the alcohol into vinegar commences, and that no destructive fermentation be present at any time—indeed, that no two kinds of fermentation be taking place at the same time. If the different kinds of fermentation are kept absolutely apart, then the quantity and strength of the vinegar finally obtained will depend absolutely on the quantity of the sugar started with, no matter whether the original was pure honey or sugar.

I do not intend to criticise the doctor; but his short Straw might mislead some parties, although he, no doubt, is perfectly acquainted with the matter.

OTTO LUHDORFF.

Visalia, Cal., May 20, 1904.

OPEN-AIR FEEDING SUCCESSFULLY PRACTICED BY AN EXTENSIVE BEE-KEEPER.

I see that great caution is given against open-air feeding. I also notice how the veterans and others have lost by open-air feeding. Why is this? I have built up hundreds of colonies by open-air feeding, and never yet have lost one by so doing; in fact, it is the only proper way to feed an apiary. Yes, there goes Dr. Miller up on

a jump, and tells the boys to look out with that big open-air feeder or the strong colonies will get the most of it. Well, of course a strong colony will get more than a weak one; but what if it does? The more fed, the more brood, and then take from the strong to help the weak ones. Your feed does far more good if fed in the open air, and not a tenth of the labor or time is occupied. It takes me about half an hour to make up feed and feed 400 colonies by open-air feeding; and then what a nice sight to see bees coming and going from every hive in the apiary! Mr. A. I. Root said to me while he was at my home, "Why, Mr. Woodward, your combs all seem to be fine and perfect." Those same combs were all built from the open-air feeder, all drawn from full sheets of foundation, at a time when there was no honey coming from the field.

In this country one can not afford to have his combs all drawn out at the expense of the honey harvest; and just think of having to feed from 400 to 500 colonies of bees every day for three or four months, one colony at a time. But there is a right way and a wrong way to do any kind of work. With my system of open-air feeding I feed at any time of day. When I'm running high-pressure feeding I keep the great feeder full all day long. I usually feed about 1000 lbs. a day, sometimes more; and the feeder should never be placed in the apiary — always a few rods away. The results will be much better. One can stand and see the bees throw a fine spray through the air as they go to their hives. This is the evaporation of water from the sugar.

C. E. Woodward.

Guanabano, Cuba, June 14.

[We used to practice, some years ago, outdoor feeding, but with a very low grade of sweet, much diluted with water. I feel satisfied that a veteran like you can feed diluted honey in the manner you describe; but the average beginner, and perhaps experienced bee-keepers, too, who are located in town, would do well to practice feeding only with the individual hive. This is an important subject, and we should be glad to hear from our subscribers who have made a success or a failure with the plan. —Ed.]

A SWARM THAT BECAME CROSS ON BEING DUMPED.

For the first time in hiving a swarm of bees I had to run for shelter, and stay 20 minutes. The swarm clustered on a horizontal limb 8 ft. from the ground. To reach them I placed a low step-ladder, then with a large galvanized pail held under the bees I struck the limb with a club and dislodged half of them. Most of them fell into the pail, and some dozens on to the hand holding the pail. They did effectual work on that hand, and tried their best at my head, but that was protected. The onslaught was so great I had to beat a retreat. The bees had clustered but a few minutes when I attempted to hive them. My theory is that the anger of the bees was caused by hunger. The mother-hive is a two-story chaff. The bees covered the front of the hive both night and day for nearly or quite two weeks. When they swarmed, the hungry ones from the front, and the full ones from the inside, made the swarm. The bees are a mixed race, black blood prevailing. The bees I caught in the pail I put on the hiving-board. All the bees entered the hive at their leisure. W. Young.

Palmyra, Neb., June 20, 1904.

[It is not at all probable that the bees were cross because of hunger. Any swarm hanging on a limb may be made cross if suddenly dumped. There is one thing I will not do if I can possibly avoid it; and that is, to get directly under a swarm so that the bees may lodge on my hands or clothing. Very often I find that a swarm suddenly jarred from its position into a hiving-box will become quite enraged — especially so if the bees are hybrids. To avoid an onslaught I usually blow a little smoke, when possible, on the outside of the swarm, and then give it a jar, when all will be well.—Ed.]

DO QUEENS MATE THE SECOND TIME AFTER LAYING?

I notice some of the writers for Gleanings tell about clipping queens' wings. I have done it with good success. Some say queens mate just once, for life, and in one of the late issues of Gleanings some one told of queens mating more than once. But I don't see where there is any possible chance for them to mate more than once if their wings were clipped, as that would make them useless if it is common for them to mate a second time. J. Stine.

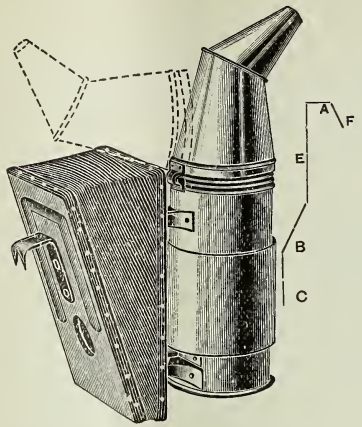
Sigourney, Iowa, June 20, 1904.

[Queens do not mate the second time *after laying* — at least there has been no good evidence offered that goes to prove that such mating does take place. The item you saw does not refer to mating a second time after laying, but mating *before* any eggs were laid. You probably misread the item. On page 602, June 15, you will find further evidence along the same line.—Ed.]

MAKING THE BEE-SMOKER AUTOMATIC.

Mr. Root:—Do you know you have the hook on the wrong side of the smoker? When you hang the smoker on the edge of the hive, the nozzle turns away from it, and the smoker does not do you any good until you pick it up, turn it around, and blow; then you have to turn it around again and hang it up before you can have both hands free and proceed with your work. If the smoker hangs on the windy side of the hive, the wind blows into the nozzle, stops the draft, and eventually will make the fire go

out. These things always troubled and annoyed me until I devised and attached a hook to the fire-pot, as shown in the accompanying cut. This hook is made of strap-iron, one inch wide and scant $\frac{1}{12}$ inch thick.



It is fastened to the fire-pot with two rivets at B and C. The top of the hook should be two or two and a half inches befow the orifice of the nozzle; and the end of the hook F should be cut off square, and filed smooth to prevent it from catching in clothing or scratching the hands. The lower part of the hook, B-C, should be shaped to fit the fire-pot.

You do not need any clockwork or complicated machinery to blow your smoker. The wind does it, and there is generally wind enough for that purpose. Hang the smoker on the windy side of the hive, and you will have a gentle stream of smoke blowing continuously across the top of the frames. This keeps the bees quiet and out of the way, and prevents stings on the hands, these being more or less in the smoke nearly all the time. I have worked the whole day performing all the usual spring manipulations without getting a sting except when I happened to pinch a bee. When it is necessary to blow *downward*, just tilt the smoker a little without removing it from its place. For this reason the angle at *a* is made flaring, so that it will not pinch on the edge of the hive. I seldom handle the smoker from the moment I open the hive and first drive the bees down until I am through with my work and put the cover back on the hive.

For your new-style smokers the hook might be shortened and attached just below the hinge; but the long upright part, *e*, should be far enough from the fire-pot to prevent the heat from blistering the paint on the hive. Try it and be convinced, and delighted.

I have left the old hook on the bellows, as it is sometimes handy in other ways, but it could be dispensed with.

WM. MUTH-RASMUSSEN.

Independence, Cal., May 16.

[I have always felt that the hook should be on the front side of the smoker, but did not feel like having it riveted permanently to the front of the cup under the snout, as it seemed to me it would bring the smoker-barrel jam up against the end or side of the hive, scorching it badly. As we ordinarily use the hook attached to the bellows, the smoker is not hung next to the hive but from a tool-box and hive-seat combined. As thus used, the hook on the bellows is in the right place, and does away with all danger of burning or scorching the hive.

You have bent the hook, though, as per your sketch, so as to hold the smoker away from the hive; but if we were to attach the hook permanently to the smoker-barrel by means of rivets, some would complain, as they have no use for hooks of any kind — even if you would pay them to use them. Therefore we send a loose hook inside of the fire-cup, leaving the purchaser to attach it or not, just as he chooses. He can rivet it to the front of the smoker-cup if he prefers it that way.—ED.]

IS IT ALFALFA OR SWEET CLOVER?

What kind of clover is this I send you? Is it the genuine alfalfa? It was found along the Ohio River near a little town called New Matamoras, Ohio.

Friendly, W. Va. SAMP. WILLIAMSON.

[The sample of clover has been examined. In young plants it is difficult to distinguish between sweet clover and alfalfa. When they are in blossom, however, or have grown to be of considerable size, they show quite a marked difference. I hardly think there is any alfalfa growing wild along the roadsides or riverbeds in your locality, so that what you send is probably sweet clover. If it has white or yellow blossoms in July or August you may be satisfied it is sweet clover. If the blossoms are of a deep violet, then unquestionably it is alfalfa.—ED.]

HOUSEHOLD AMMONIA FOR REMOVING PROPOLIS.

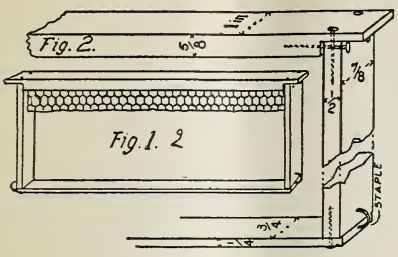
I notice Mr. Kilgore's letter, June 1, mentioning sapolio as a remover of propolis. Did you ever use ordinary household ammonia? A dilute solution of this will remove propolis from the hands just as he says sapolio does—as by magic. Very little rubbing is required, the action of the ammonia solution apparently being that of a solvent. Try it. CHARLES E. FRICK.

Philadelphia, June 6.

COGGSHALL'S BROOD-FRAME WITH END STAPLES.

Stapling frames is important, for, even with men who move only once an hour, I have yet to see one who will take out half the frames of any hanging frame, without killing or maiming some bees. A man could, with great care and a steady hand, take out a set in five or six minutes, possibly,

without maiming bees. Mr. Root, you just paint the end of a set of frames and put them in a hive and take them out, and see how many times you hit the end of the hive while handling. Paint will show on hives. But not necessarily does it kill a bee, but



maims it. No one, while raising a barn, would like to stand near the side of another building. You can't shake off a frame of bees inside of the hive half way down without killing five or ten bees unless you have a staple or nail in the lower end of the frame. When you had a cut made of my frame, and the engraver put the staple so it shows up in under the top-bar, I was disgusted. I am not always right. Some would not have the staple, I suppose, except in the upper corner. W. L. COGGSHALL.

West Groton, N. Y.

[Unless our artist has something more than a rough diagram to work from he is liable not to make the finished picture correct in every detail As he has submitted the new drawing to you, and secured your "O. K.," we may assume that this one is correct.

As you work shaking the frames, the staple at the bottom corner is almost a necessity—indeed, a necessity for every one who shakes in the hive. It can be attached to any hanging frame, including the Hoffman.—ED.]

BLEACHING THE DARKEST YELLOW COMBS WHITE.

If the man asking for a plan to bleach comb honey will follow these directions he will be satisfied to his heart's content, for the darkest yellow combs can be made perfectly white. The worst class may need two treatments, but all yield.

Dig a short trench; set over this two empty hive bodies. On this, place about seven supers of honey. For bleaching, take half a teacupful of sulphur; put it in an iron plate or piece of tin; put it in the trench under the hives and light it, almost entirely closing the entrance, and allow the fumes to pass up through the honey. It should remain at least two hours, then place the honey in a strong light, or even the sun, if the air can circulate well. I have a tier of shelves in the open yard, with mosquito netting thrown over it. L. J. TODD.

Mariel, Cuba.

THE FOUNDATION FROM THE GIVEN PRESS.

In GLEANINGS for May 1 you ask if our Given foundation-press still works satisfactorily. It does. We make all of our own foundation, and also for other bee-keepers in this community. They like the foundation. We make better than that made with a roller mill. Of course, it is slower work, but we have the advantage of being able to leave a margin of ¼ inch at the top end which is not corrugated, thus making it easier to fasten the foundation to the top-bar of the frame.

As to the extractors, they are of about the same gear. Each is a ten-frame extractor, works satisfactorily, and runs easily.

White clover is rather late this year, but it promises to be good, and the workers are ready and willing to gather the nectar. Our loss last winter was very small.

LOUIS C. KOEHLER.

Tisch Mills, Wis., June 15.

I am come that they might have life, and that they might have it more abundantly.—JOHN 10:10.

Not only is our text a beautiful thought, but it is most beautifully expressed. Jesus is contrasting his life and his mission here on earth with the lives of thieves and robbers, who live only to trouble and distress the honest hard-working people. *His* life and his mission were to give humanity "life" in the truest sense of the word; and not only that, but to give it *more* abundantly to those who have already a fair amount of health and happiness. It is as true today as it was then that all *real* life and happiness come through showing forth to the world the spirit of Christ Jesus. Christian nations are always in advance in bestowing health, happiness, and peace on their people.

Mrs. Root and I have been having a *very* happy time for the past two weeks here at the "cabin in the woods." In writing home to the children a few days ago she said something like this: "Father is enjoying himself intensely; in fact, if he gets much happier I hardly see how he will live."

Dear friends, I have been and am exceedingly happy; and this Home paper is to tell how you may, at least to some extent, share this same happiness. I rejoice the more in it because we have no high-priced surroundings. Ours is an *exceedingly* humble home. We have no expensive clothing, and our daily food is hardly up to the average farmer's table.* We have, however, an abundance of beautiful pure air—I call it the finest in the world, that is, so far as I have "sampled" the world. To get the full benefit of it we still live in the original "cabin" that is so well ventilated it is almost like living out of doors. Our good friend Terry is still hammering away in the Philadelphia *Practical Farmer* in regard to the importance of a *great lot* of outdoor air. Why, he is almost *thundering* it in people's ears that they are sick and ailing *because* they sleep in rooms with the doors and windows shut, and that they would most of them *get well* if they would let drugs alone and just live and sleep *outdoors*.

When in Medina I take my after-dinner nap in a large airy basement. I noticed long ago I always got up with a bad taste in my mouth unless the windows were open on both sides of the room, and even then there is apt to be a little of this and other symptoms of indigestion unless there is a good strong breeze through the apartment. Terry says, and I think he is right, that all the talk and notions about "sleeping in a draft of air" are pure nonsense, or would be if folks were only *accustomed* to a breeze day and night.

Well, as it has been rather cool here I have been taking my naps in the cabin with the doors and windows open; but Mrs. Root insisted that the hammock in a group of maples just above the cabin, on a hill overlooking the bay, was a much better place, and asked me to experiment carefully and note the difference. I did so. Sleeping in this cool breeze from off the great Northern Lakes is really a *wonderful* invigorator and appetizer. That last word is important. I now eat fruit, vegetables, and any thing that comes handy, like all the rest of the world. Of course, I work every day and do some pretty hard work. One reason why I am happy is that my strength holds out, *almost* from daylight until dark. We not only have this great abundance of pure air, but we have a running stream of pure spring water right at our door. Hot water just now is a "back number," but I drink *great quantities* of cold water — perhaps more than I ever drank before — that is, while I am hard at work *out of doors*.

Now, this isn't all. Pure water and pure air in great plenty are grand; but *I* think we want lots of *sunshine* also. My clothing up here in the woods is of the lightest description, so I get the sun pretty well almost all over my body all the time; but I am going further. When I get warm and sweaty I make a little inclosure of empty potato-boxes and a strip of canvas so I can sit right in the sun, say at 2 o'clock, entirely divested of every thing. "Get sunburned?" Oh, no! for a light hose, carrying this same spring water, gives me a most refreshing shower bath. After you get a little used to it, water at from 70 to 75° is very much more refreshing than any thing warmer. Our spring water comes through iron pipes mostly on top of the ground, and the sun on these pipes warms it up just right for a bath in the middle of a sunny day. It is nice for drinking, nights and mornings, so we keep a pail of it on the north side of the cabin for the middle of the day.

Now, physical health and strength, while they *should* fill our hearts with thankfulness, are not sufficient to give us happiness or the "life" mentioned in our text. The thieves and outlaws may have good health; but have they the life the Savior mentions? Do they enjoy life in any such way as the honest man who works hard for the benefit of his fellows? Surely not. I have been very happy in making a flower-bed in front of the little church (see p. 557 last issue), and I have been happy in working for others (instead of self) in many ways. I have also been happy in looking after my plants and trees that I had not seen for about two months. I am testing different things on these sandy hills. We have eight varieties of currants, six of gooseberries, about as many blackberries, some English filberts, the improved large chestnuts, besides peaches, plums, etc. Some

* For a man's life consisteth not in the abundance of the things he possesseth.—LUKE 12:15.

of the peaches were hurt by the severe winter; but apples, pears, plums, and cherries stood it apparently unharmed. Apricots thrive amazingly. Insects never trouble them, and they are earlier than any peaches, and, *I* think, more delicious. I can not see why they are not more generally grown in this region. On one of our steep side-hills, where the white sand almost "runs" down hill in a dry time, we planted some rhubarb, or pie-plant. The ground looked too poor and dry to grow any thing; but this spring we found the largest, finest, and most luxurious growth, without any manure, and almost *no care*. The leaves are a yard across; the stalks a yard long, and big enough so one makes a pie. It needs experimenting to find what crops are suited to this region, and it is this experimenting that I enjoy.

A "HOME" ON FIRE.

While our neighbor Hilbert and his wife were in town a few days ago his house burned up. Gladys, only six years old, saw it first. She told her sister Alice, about fifteen, who was the only one at home besides the hired girl. You will remember Alice as one of my particular friends. Well, I will tell you how a girl of fifteen managed. She ran to the bell that is on a post near the house, and rang it so vigorously it turned over and wouldn't ring any more, then after being headed off on the bell she went to the telephone and yelled to central, "Hilbert's house is on fire! Tell everybody near us!"* Then she tried to carry water into the attic where the fire was, but no one could get in on account of smoke and flames, so she and the girl, only a little older, began to get out the goods. By this time men, women, and children were pouring in from all sides, and every thing was got out of the lower rooms. They might have taken some things out of the cellar; but the barn took fire several times, and took the whole crowd to save that.

Now. here are several good lessons for us all. Every home should have a good bell that can be rung by even a child, to be used in any case of emergency, besides calling the hungry men to dinner. I wish also every home had a telephone. This one saved a good-sized barn and contents. Better have your home insured also. While friend H.'s insurance ($700) does not make him good, it is a big help on the new house. Every home should have some boys and girls (God willing), and these boys and girls should be taught to bear responsibility. Could any of my fifteen year-old readers do any better than Alice did? The fire started in the attic from a defective chimney. Had you not better look over and *into your* chimney while the matter is up? If I remember correctly, more than half the fires in country homes come from defective mason or carpenter work, or both.

* Alice thinks toward forty people — men, women, and children—were there in about ten minutes after that telephone message. Bicycles flew up hill and down in reckless haste. After this last faithful service a boy knocked the telephone loose with an ax and rescued it from the flames. One of the pleasant things about a community like this is the eager alacrity with which all the neighbors rush to the aid of one of their number who is in trouble. Then is the Christian spirit, or, we might say, *Christ* spirit manifest. I am sure that Sunday-school held every week (preaching is only every other week) helps to encourage this unselfish disposition.

THE BONNIE BEE.

BY E. T. SPOTTSWOOD, M. D.

The bee! the bee! the bonnie bee,
That flits from flower and shrub and tree,
When early morning's sunlight gilds
The tree-tops on the distant hills.
Obedient to stern duty's call,
It hastes to gather sweets for all;
And, flying fast on buzzing wings,
The happy toiler joyous sings—
In busy flight speeds quick along,
And crooning hums sweet labor's song;
And, wandering o'er the meadow's breast,
One moment on each flower 'twill rest;
Now on the drooping columbine,
And then the yellow dandelion—
On feathery plumes that graceful nod,
Of the fragrant yellow goldenrod;
Then from the wild rose ruby lips
The dainty nectar sweetly sips.
The modest clover yields its sweet
To fill the hoarded store complete,
And from the linden's leaf it drew
The luscious stores of honey-dew,
And every bloom and every flower
To its caress yields up its dower.
Then when the length'ning shadows crawl,
And on the flowery landscape fall,
And setting sun's fast-fading light
Gives warning of the coming night,
It homeward wings its rapid way
To close the long and happy day.
Is it not true that even we
May learn some truths from Bonnie Bee—
To shun the bitter that we know,
And gather sweets where'er we go,
And bring the treasures we have found
To lighten up life's weary round?